Fig. 1

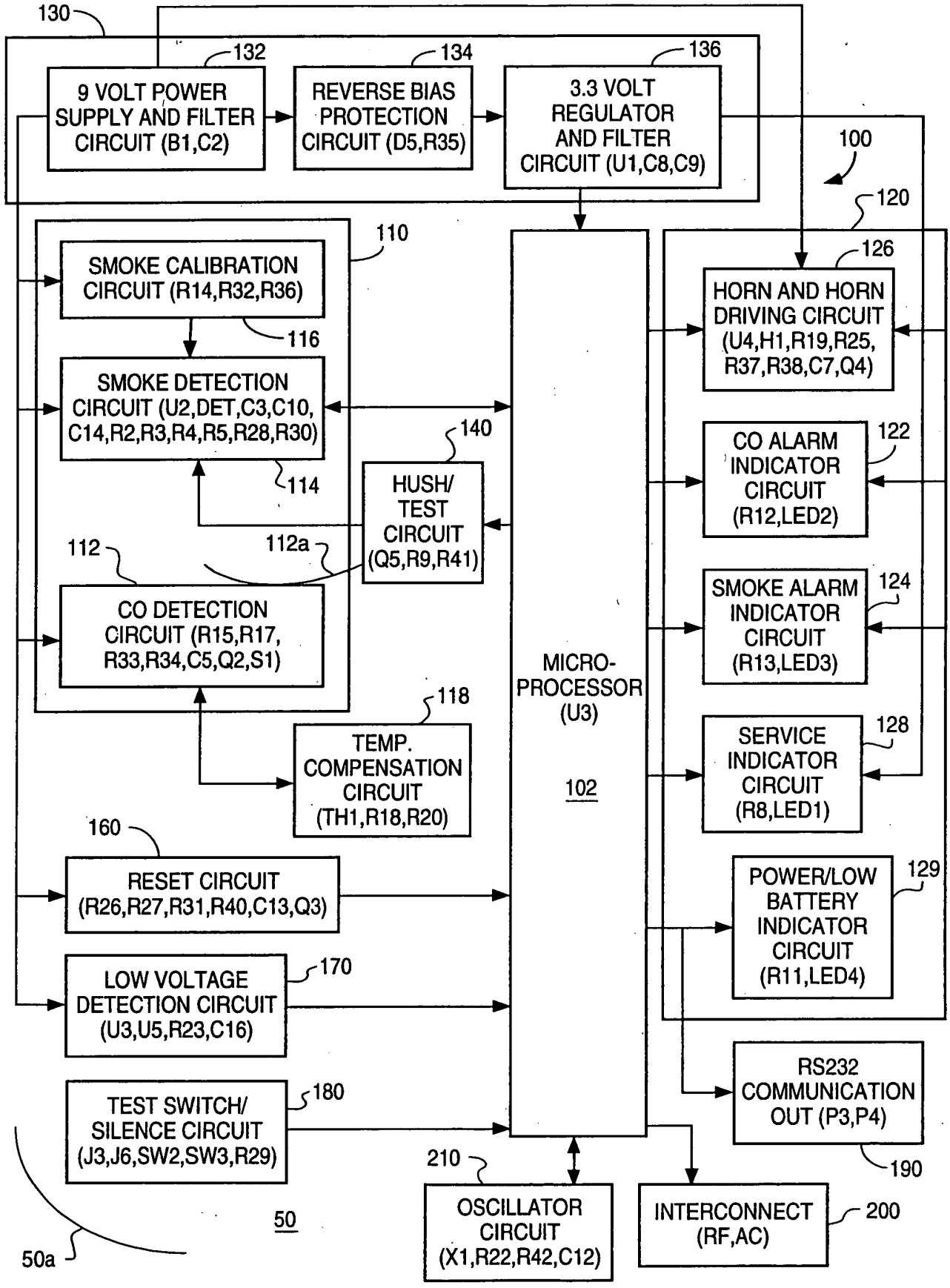
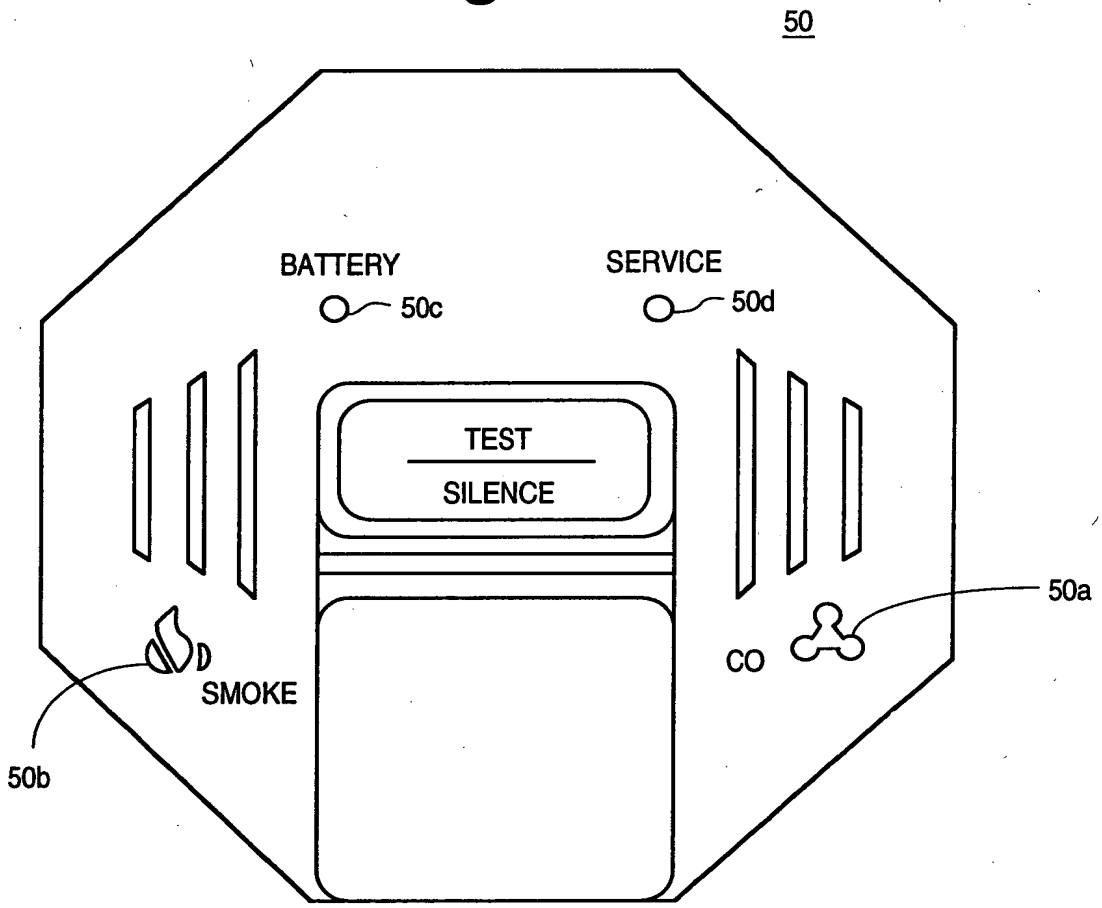

130
132
9 VOLT POWER SUPPLY AND FILTER CIRCUIT (B1,C2)
134
REVERSE BIAS PROTECTION CIRCUIT (D5,R35)
136
3.3 VOLT REGULATOR AND FILTER CIRCUIT (U1,C8,C9)
100
120
110
SMOKE CALIBRATION CIRCUIT (R14,R32,R36)
116
SMOKE DETECTION CIRCUIT (U2,DET,C3,C10, C14,R2,R3,R4,R5,R28,R30)
114
140
HUSH/ TEST CIRCUIT (Q5,R9,R41)
112
112a
CO DETECTION CIRCUIT (R15,R17, R33,R34,C5,Q2,S1)
118
TEMP. COMPENSATION CIRCUIT (TH1,R18,R20)
MICRO-PROCESSOR (U3)
102
126
HORN AND HORN DRIVING CIRCUIT (U4,H1,R19,R25, R37,R38,C7,Q4)
122
CO ALARM INDICATOR CIRCUIT (R12,LED2)
124
SMOKE ALARM INDICATOR CIRCUIT (R13,LED3)
128
SERVICE INDICATOR CIRCUIT (R8,LED1)
129
POWER/LOW BATTERY INDICATOR CIRCUIT (R11,LED4)
160
RESET CIRCUIT (R26,R27,R31,R40,C13,Q3)
170
LOW VOLTAGE DETECTION CIRCUIT (U3,U5,R23,C16)
180
TEST SWITCH/ SILENCE CIRCUIT (J3,J6,SW2,SW3,R29)
RS232 COMMUNICATION OUT (P3,P4)
190
210
OSCILLATOR CIRCUIT (X1,R22,R42,C12)
INTERCONNECT (RF,AC)
200
50
50a

Fig. 1a



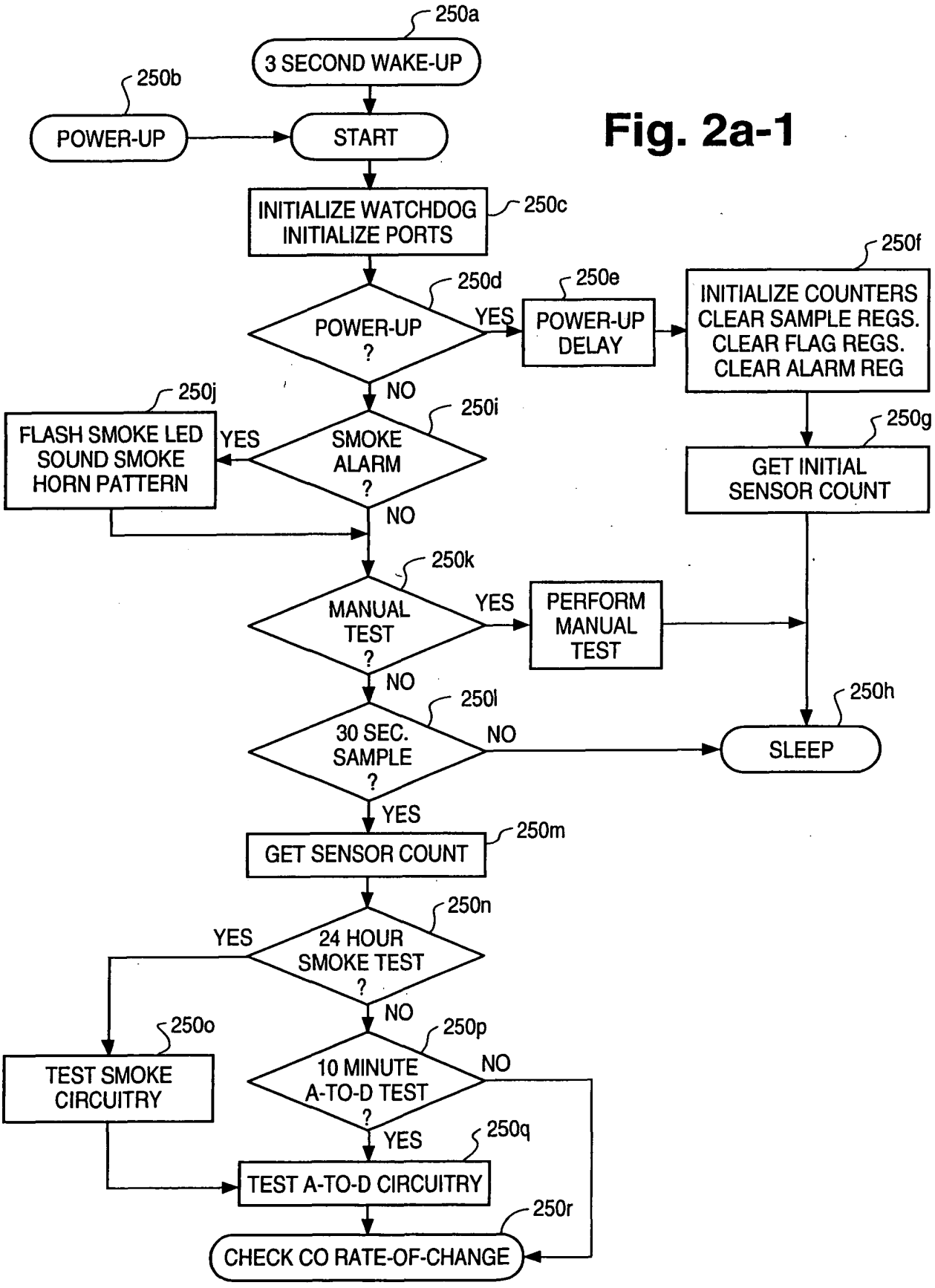

250a
3 SECOND WAKE-UP
250b
POWER-UP
START
INITIALIZE WATCHDOG
INITIALIZE PORTS
250c
250d
POWER-UP ?
YES
250e
POWER-UP DELAY
250f
INITIALIZE COUNTERS
CLEAR SAMPLE REGS.
CLEAR FLAG REGS.
CLEAR ALARM REG
NO
250j
FLASH SMOKE LED
SOUND SMOKE
HORN PATTERN
YES
250i
SMOKE ALARM ?
250g
GET INITIAL SENSOR COUNT
NO
250k
MANUAL TEST ?
YES
PERFORM MANUAL TEST
NO
250l
30 SEC. SAMPLE ?
NO
250h
SLEEP
YES
GET SENSOR COUNT
250m
250n
24 HOUR SMOKE TEST ?
YES
NO
250o
TEST SMOKE CIRCUITRY
250p
10 MINUTE A-TO-D TEST ?
NO
YES
250q
TEST A-TO-D CIRCUITRY
250r
CHECK CO RATE-OF-CHANGE

Fig. 2a-1

Fig. 2a-2

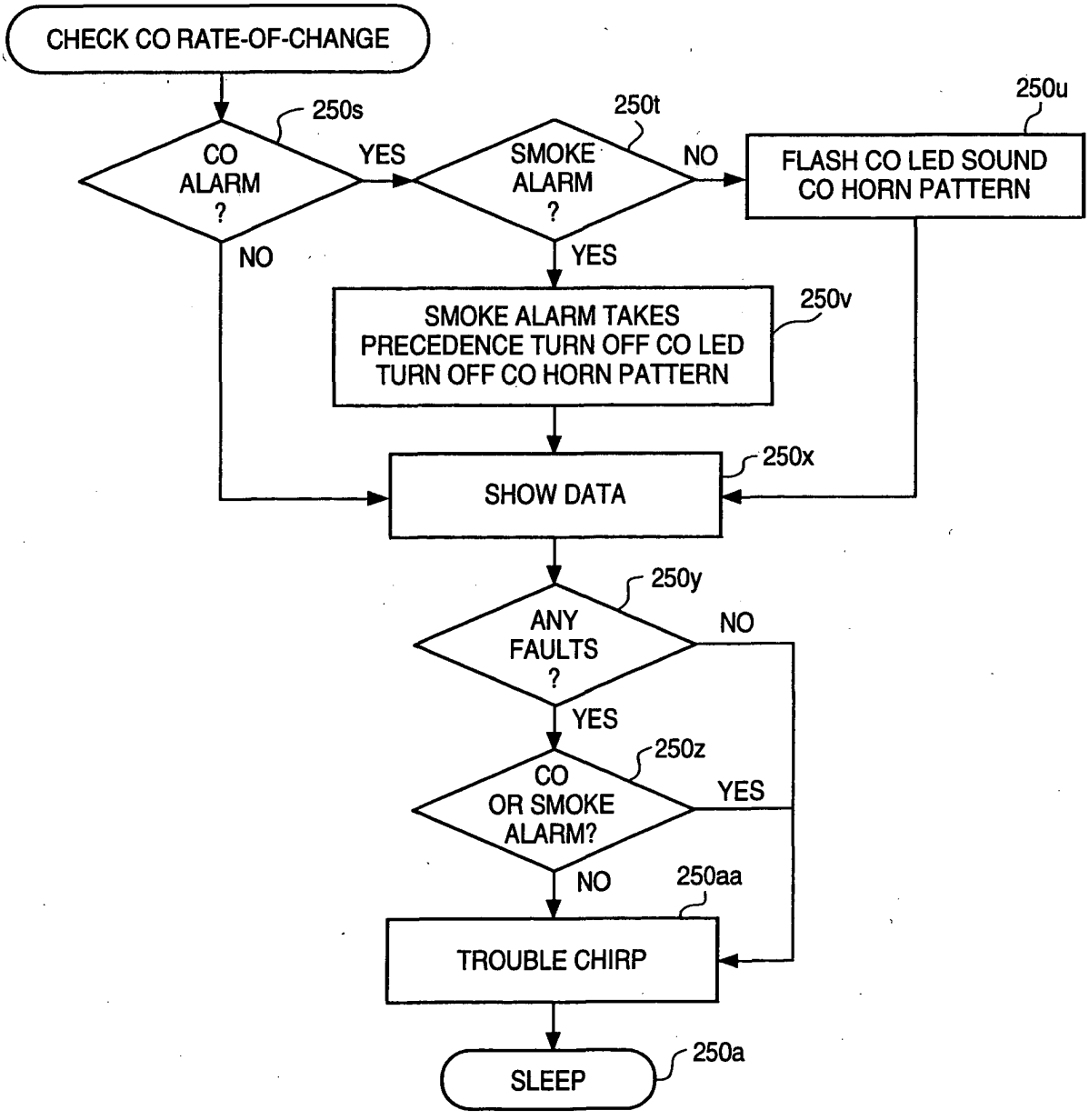

CHECK CO RATE-OF-CHANGE
250s
CO ALARM ?
YES
250t
SMOKE ALARM ?
NO
250u
FLASH CO LED SOUND CO HORN PATTERN
NO
YES
SMOKE ALARM TAKES PRECEDENCE TURN OFF CO LED TURN OFF CO HORN PATTERN
250v
SHOW DATA
250x
250y
ANY FAULTS ?
NO
YES
250z
CO OR SMOKE ALARM?
YES
NO
250aa
TROUBLE CHIRP
SLEEP
250a

Fig. 2

Fig. 2-1	Fig. 2-2	Fig. 2-3	Fig. 2-4

Fig. 2-1

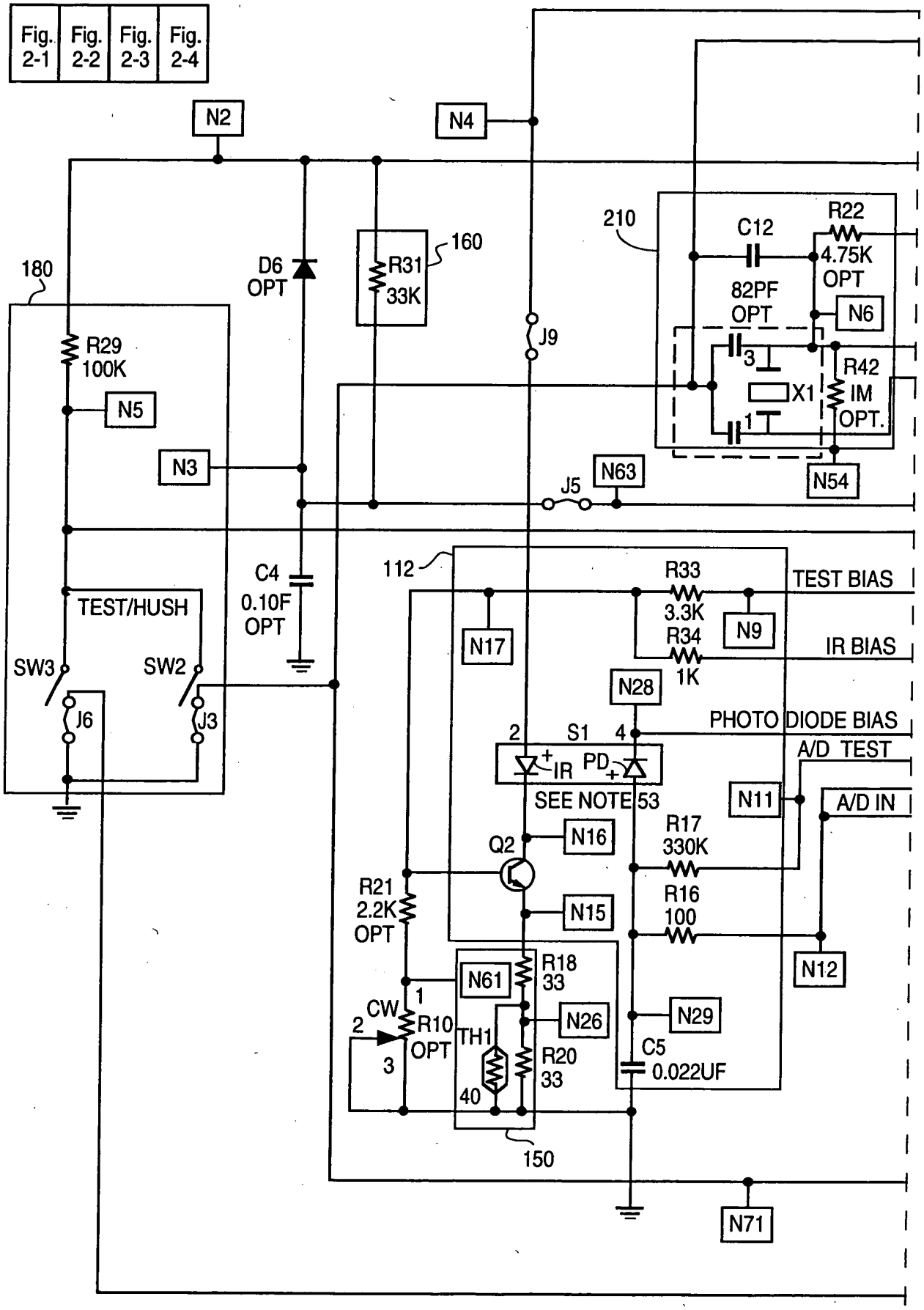


Fig. 2-2

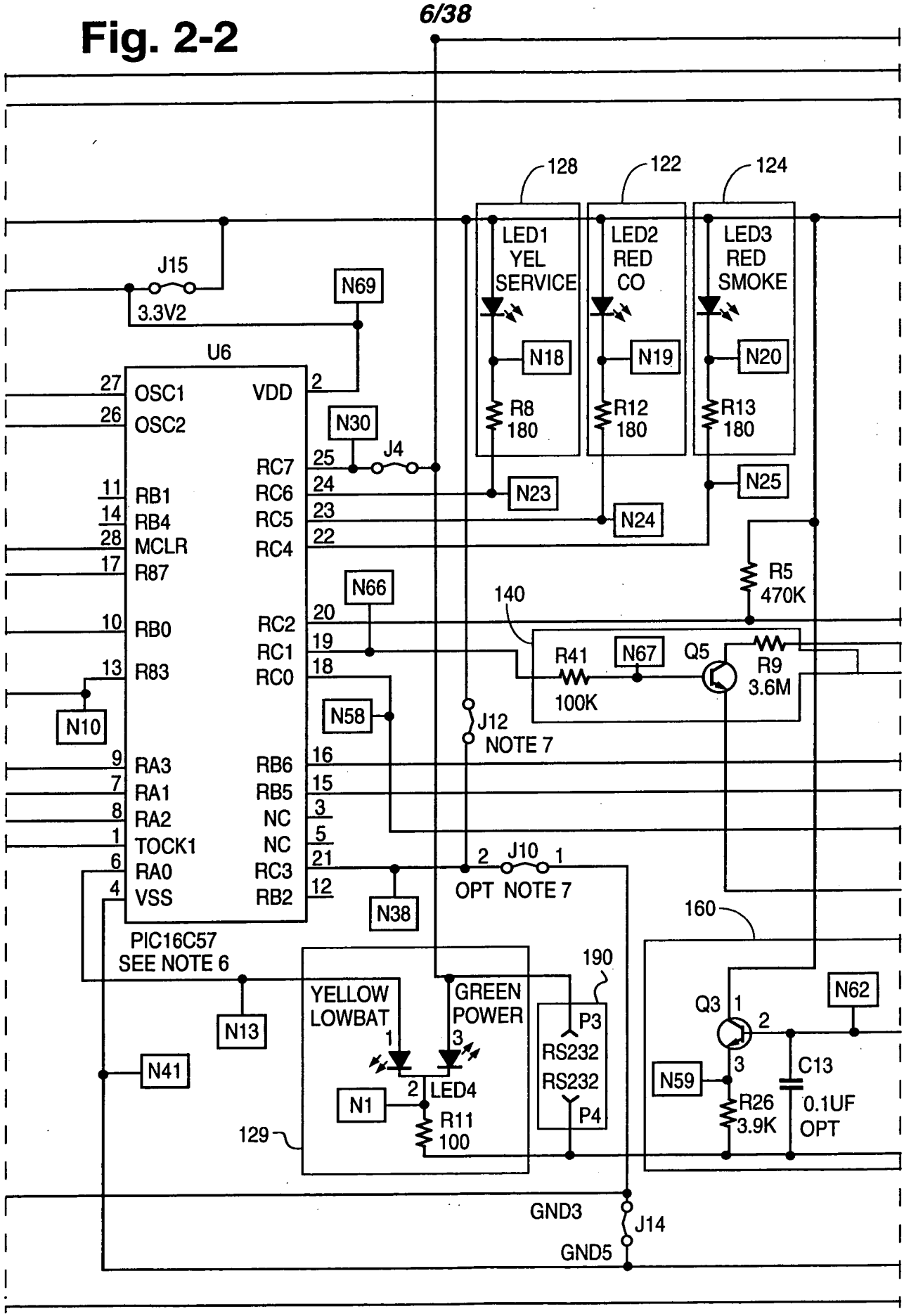

128
122
124
LED1
YEL
SERVICE
LED2
RED
CO
LED3
RED
SMOKE
J15
3.3V2
N69
U6
27
OSC1
26
OSC2
VDD
2
N30
J4
25
RC7
24
RC6
23
RC5
22
RC4
11
RB1
14
RB4
28
MCLR
17
R87
10
RB0
13
R83
N10
20
RC2
19
RC1
18
RC0
N66
N58
9
RA3
7
RA1
8
RA2
1
TOCK1
6
RA0
4
VSS
16
RB6
15
RB5
3
NC
5
NC
21
RC3
12
RB2
PIC16C57
SEE NOTE 6
N38
N13
N41
N18
N19
N20
R8
180
R12
180
R13
180
N23
N24
N25
R5
470K
140
R41
100K
N67
Q5
R9
3.6M
J12
NOTE 7
2
J10
1
OPT NOTE 7
160
190
YELLOW
LOWBAT
GREEN
POWER
1
3
2
LED4
N1
R11
100
129
P3
RS232
RS232
P4
Q3
1
2
3
N62
N59
C13
R26
3.9K
0.1UF
OPT
GND3
J14
GND5

Fig. 2-3

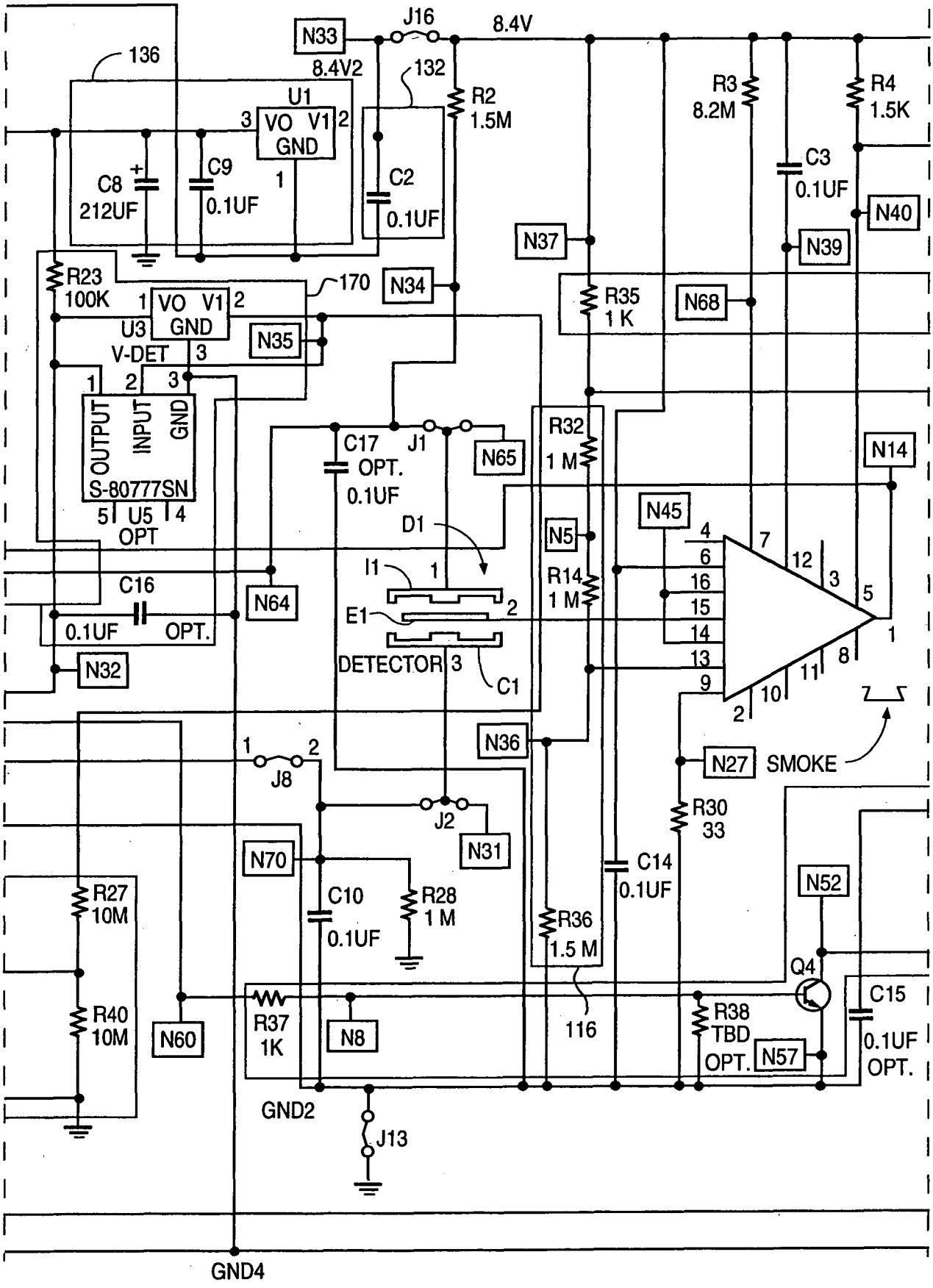

N33
J16
8.4V
8.4V2
136
132
U1
VO V1
GND
C8
212UF
C9
0.1UF
C2
0.1UF
R2
1.5M
R3
8.2M
R4
1.5K
C3
0.1UF
N40
N39
N37
R23
100K
170
N34
U3
VO V1
GND
N35
V-DET
OUTPUT
INPUT
GND
S-80777SN
U5
OPT
R35
1 K
N68
C17
OPT.
0.1UF
J1
N65
R32
1 M
N14
D1
N5
N45
I1
R14
1 M
C16
0.1UF
OPT.
N64
E1
DETECTOR
C1
N32
N36
N27
SMOKE
J8
J2
N31
R30
33
N70
C10
0.1UF
R28
1 M
C14
0.1UF
N52
R27
10M
R36
1.5 M
116
Q4
C15
0.1UF
OPT.
R40
10M
N60
R37
1K
N8
R38
TBD
OPT.
N57
GND2
J13
GND4

Fig. 2-4

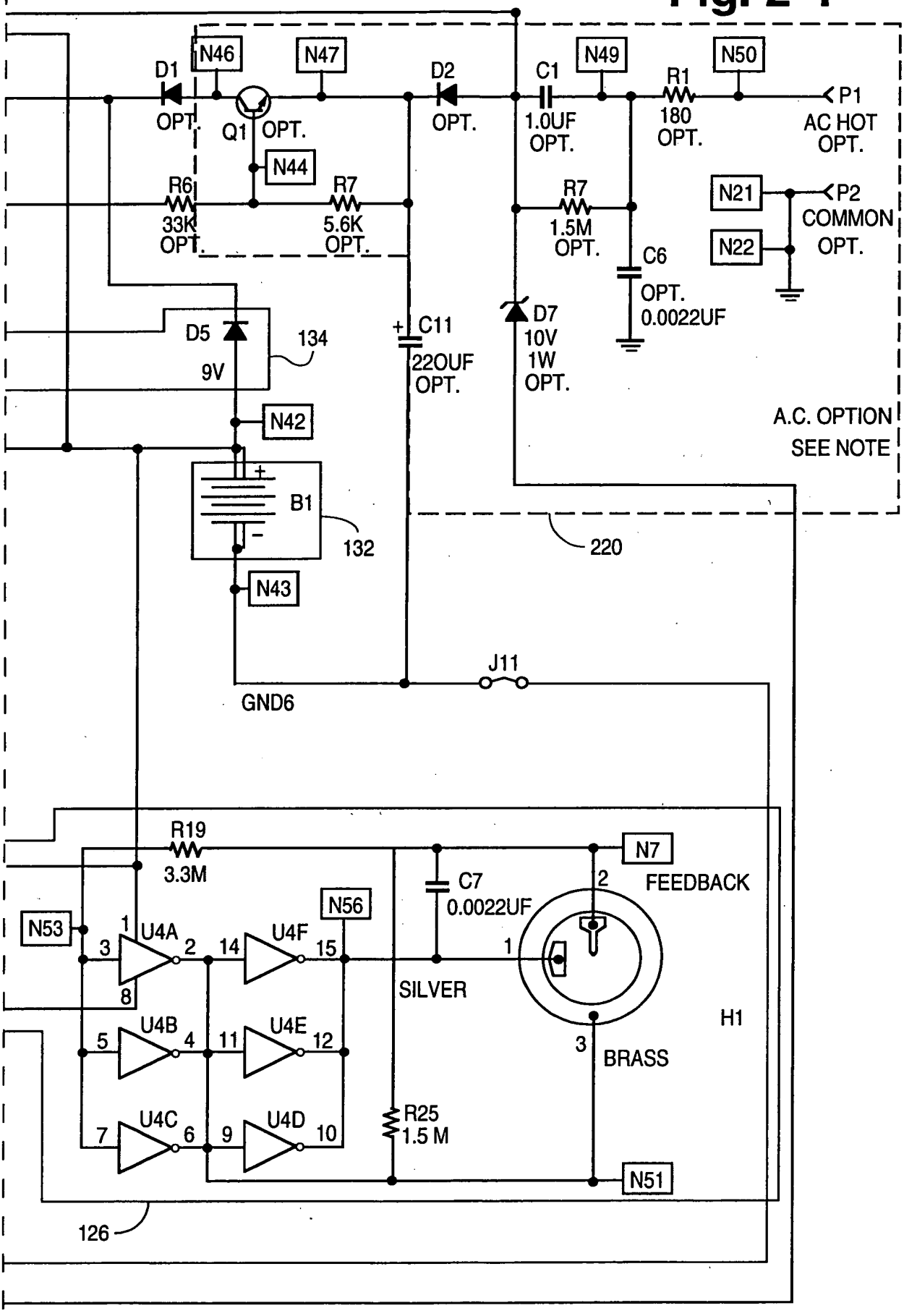

N46
N47
D1
OPT.
Q1
OPT.
N44
D2
OPT.
C1
1.0UF
OPT.
N49
R1
180
OPT.
N50
P1
AC HOT
OPT.
R6
33K
OPT.
R7
5.6K
OPT.
R7
1.5M
OPT.
C6
OPT.
0.0022UF
N21
N22
P2
COMMON
OPT.
D5
9V
134
C11
220UF
OPT.
D7
10V
1W
OPT.
A.C. OPTION
SEE NOTE
N42
B1
132
220
N43
J11
GND6
R19
3.3M
N53
U4A
U4F
N56
C7
0.0022UF
N7
FEEDBACK
SILVER
H1
U4B
U4E
BRASS
U4C
U4D
R25
1.5 M
N51
126

Fig. 3

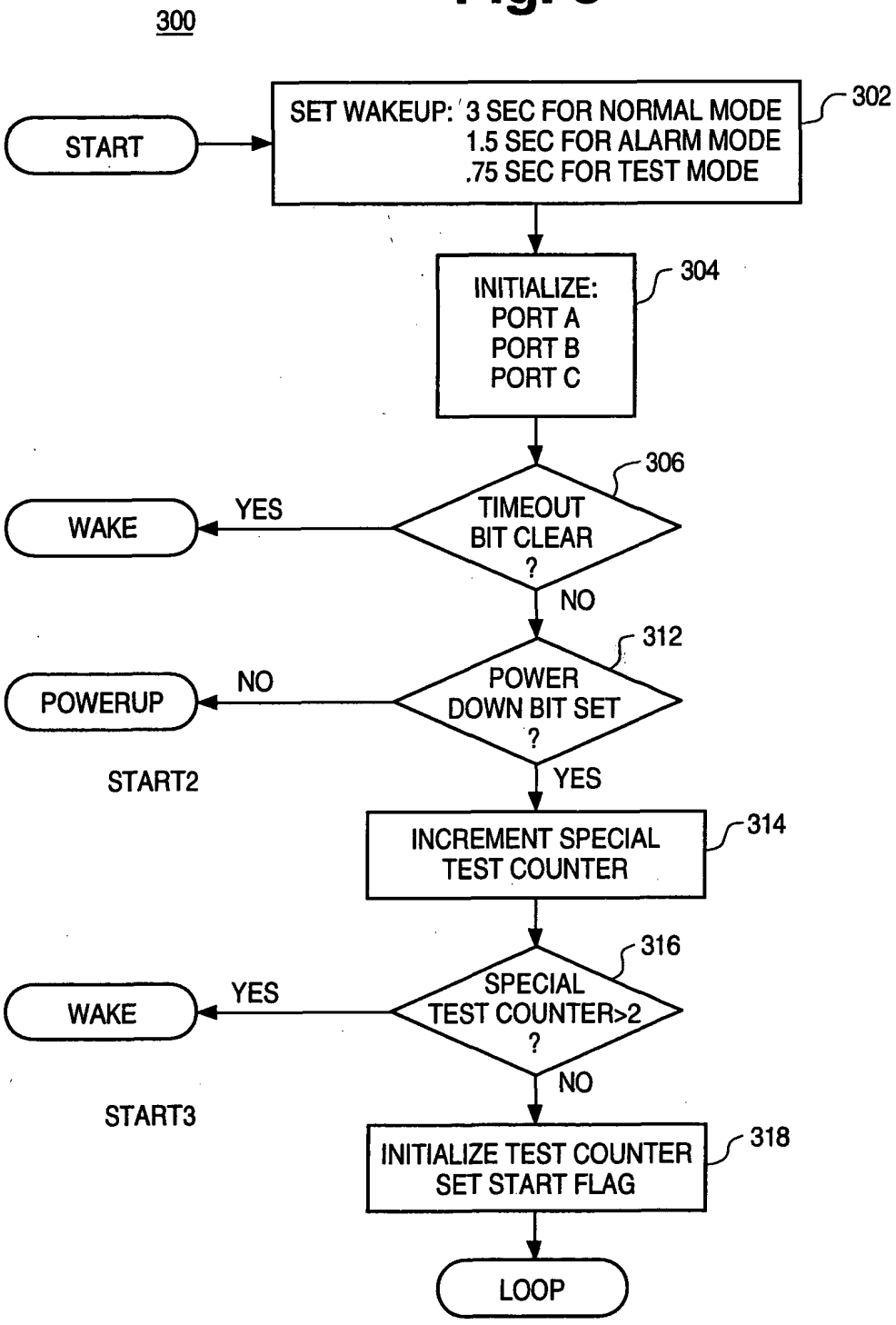

300
START
SET WAKEUP: 3 SEC FOR NORMAL MODE
1.5 SEC FOR ALARM MODE
.75 SEC FOR TEST MODE
302
INITIALIZE:
PORT A
PORT B
PORT C
304
TIMEOUT BIT CLEAR ?
306
YES
WAKE
NO
POWER DOWN BIT SET ?
312
NO
POWERUP
START2
YES
INCREMENT SPECIAL TEST COUNTER
314
SPECIAL TEST COUNTER>2 ?
316
YES
WAKE
START3
NO
INITIALIZE TEST COUNTER
SET START FLAG
318
LOOP

Fig. 4

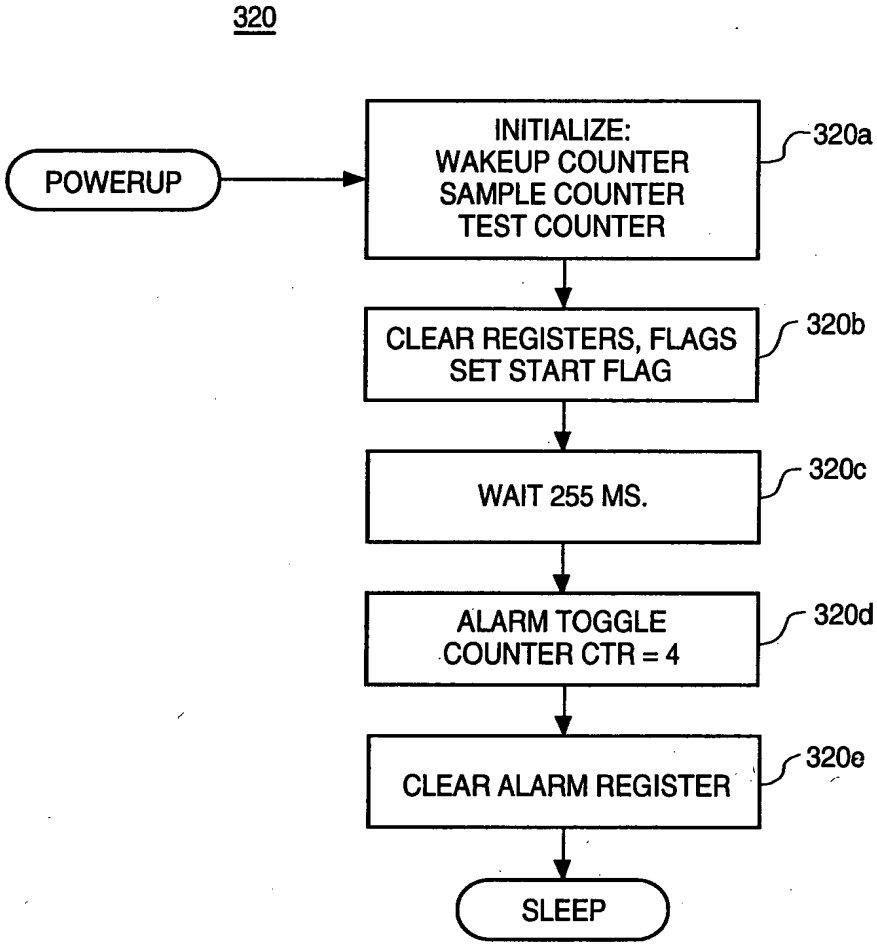

320
POWERUP
INITIALIZE:
WAKEUP COUNTER
SAMPLE COUNTER
TEST COUNTER
320a
CLEAR REGISTERS, FLAGS
SET START FLAG
320b
WAIT 255 MS.
320c
ALARM TOGGLE
COUNTER CTR = 4
320d
CLEAR ALARM REGISTER
320e
SLEEP

Fig. 5

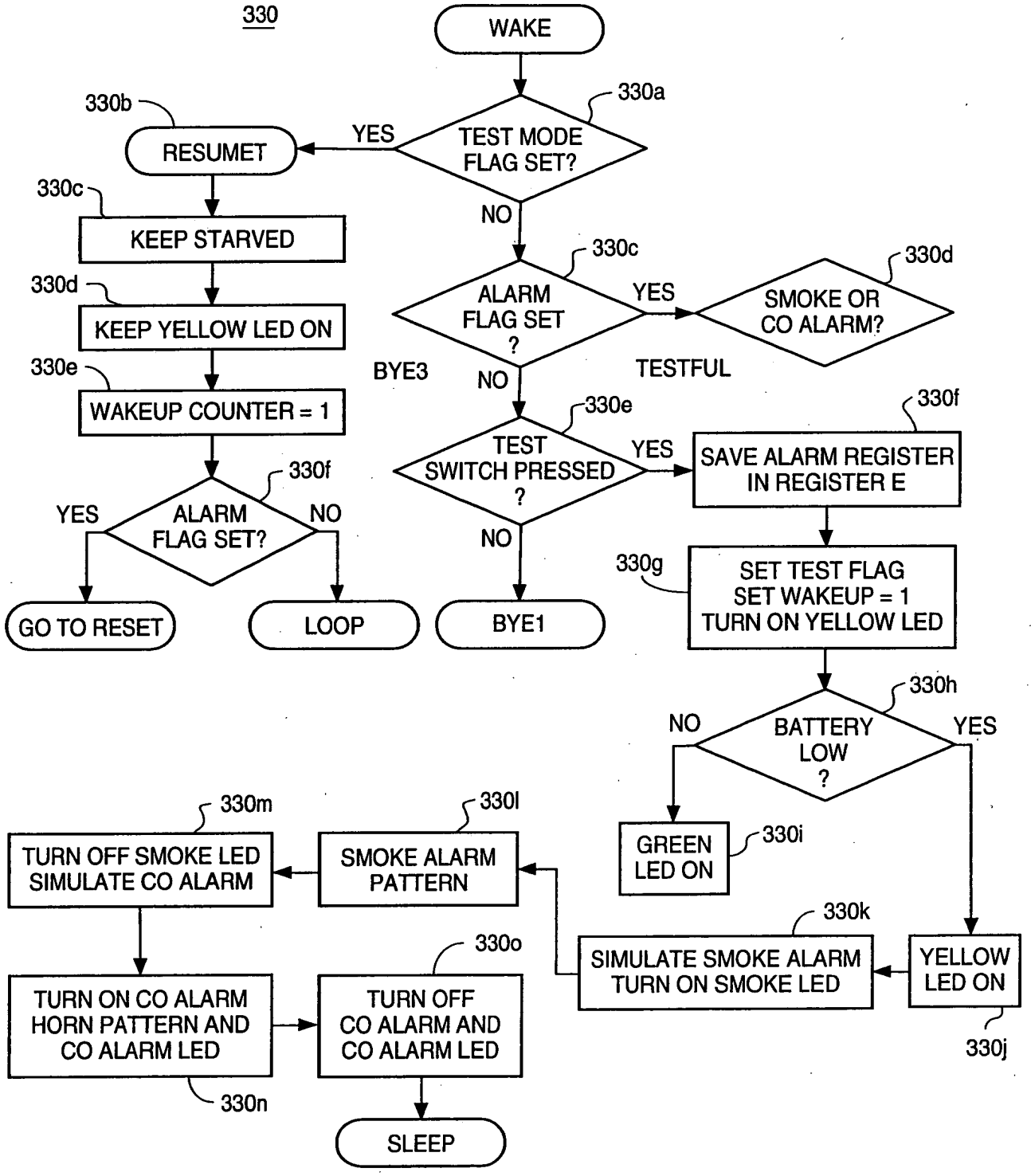

330
WAKE
330a
TEST MODE FLAG SET?
YES
330b
RESUMET
NO
330c
KEEP STARVED
330d
KEEP YELLOW LED ON
330e
WAKEUP COUNTER = 1
330f
ALARM FLAG SET?
YES
NO
GO TO RESET
LOOP
330c
ALARM FLAG SET ?
YES
330d
SMOKE OR CO ALARM?
BYE3
NO
TESTFUL
330e
TEST SWITCH PRESSED ?
YES
330f
SAVE ALARM REGISTER IN REGISTER E
NO
BYE1
330g
SET TEST FLAG SET WAKEUP = 1 TURN ON YELLOW LED
330h
BATTERY LOW ?
NO
YES
GREEN LED ON
330i
YELLOW LED ON
330j
330k
SIMULATE SMOKE ALARM TURN ON SMOKE LED
330l
SMOKE ALARM PATTERN
330m
TURN OFF SMOKE LED SIMULATE CO ALARM
330o
TURN OFF CO ALARM AND CO ALARM LED
TURN ON CO ALARM HORN PATTERN AND CO ALARM LED
330n
SLEEP

Fig. 6

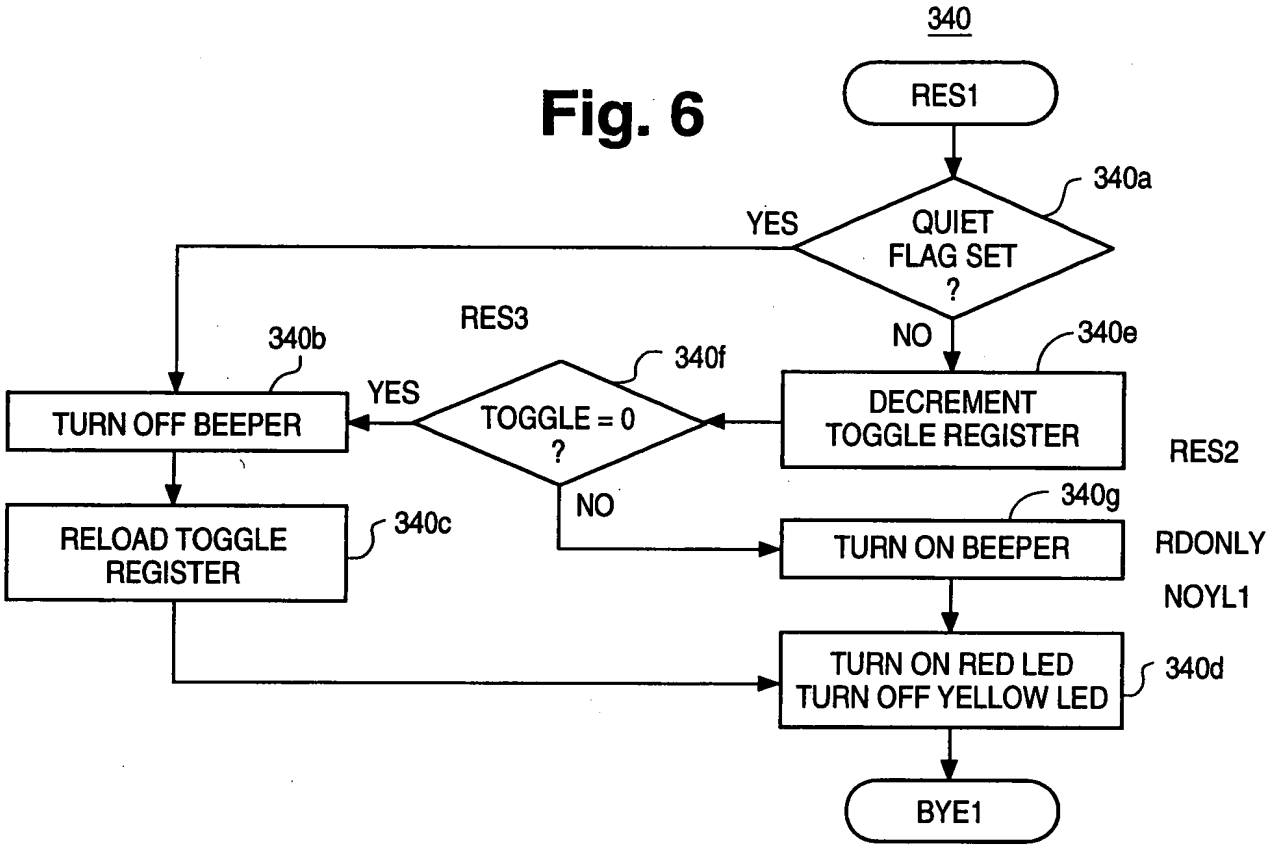

340
RES1
340a
QUIET FLAG SET ?
YES
NO
RES3
340b
340f
340e
TURN OFF BEEPER
YES
TOGGLE = 0 ?
DECREMENT TOGGLE REGISTER
RES2
RELOAD TOGGLE REGISTER
340c
NO
340g
TURN ON BEEPER
RDONLY
NOYL1
TURN ON RED LED
TURN OFF YELLOW LED
340d
BYE1

Fig. 7

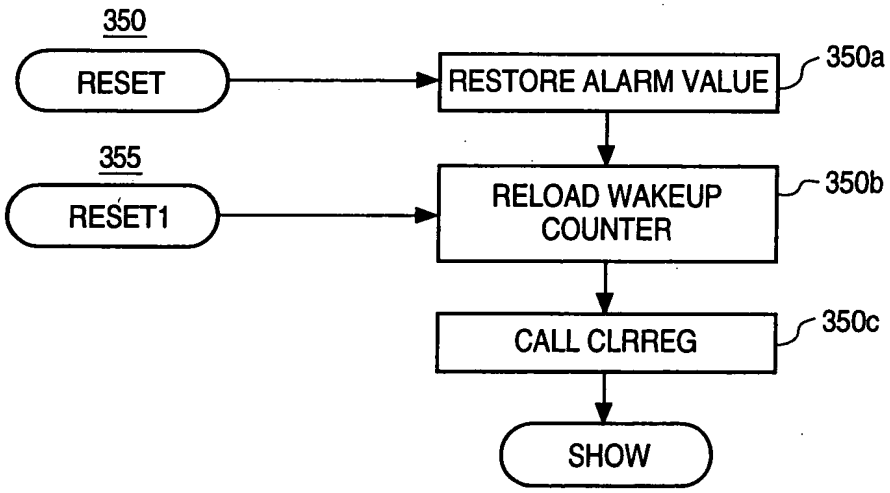

350
RESET
RESTORE ALARM VALUE
350a
355
RESET1
RELOAD WAKEUP COUNTER
350b
CALL CLRREG
350c
SHOW

Fig. 8

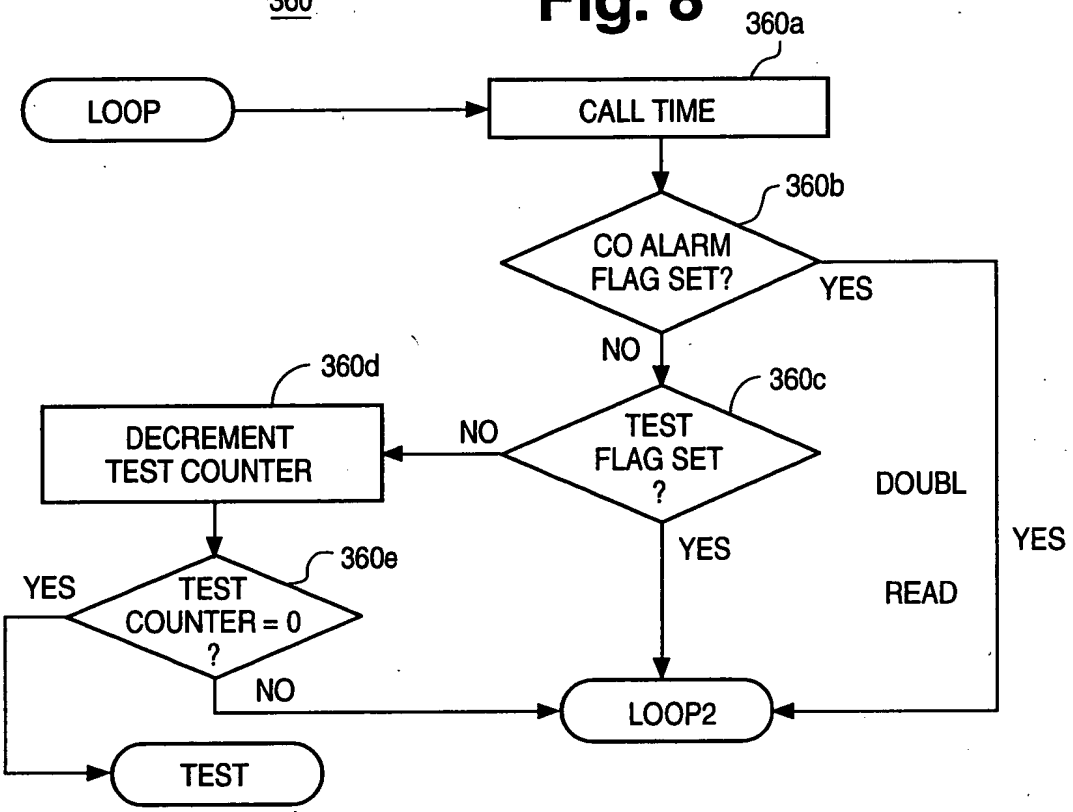

360
360a
LOOP
CALL TIME
360b
CO ALARM FLAG SET?
YES
NO
360d
360c
DECREMENT TEST COUNTER
NO
TEST FLAG SET ?
DOUBL
YES
YES
360e
YES
TEST COUNTER = 0 ?
READ
NO
LOOP2
TEST

Fig. 9

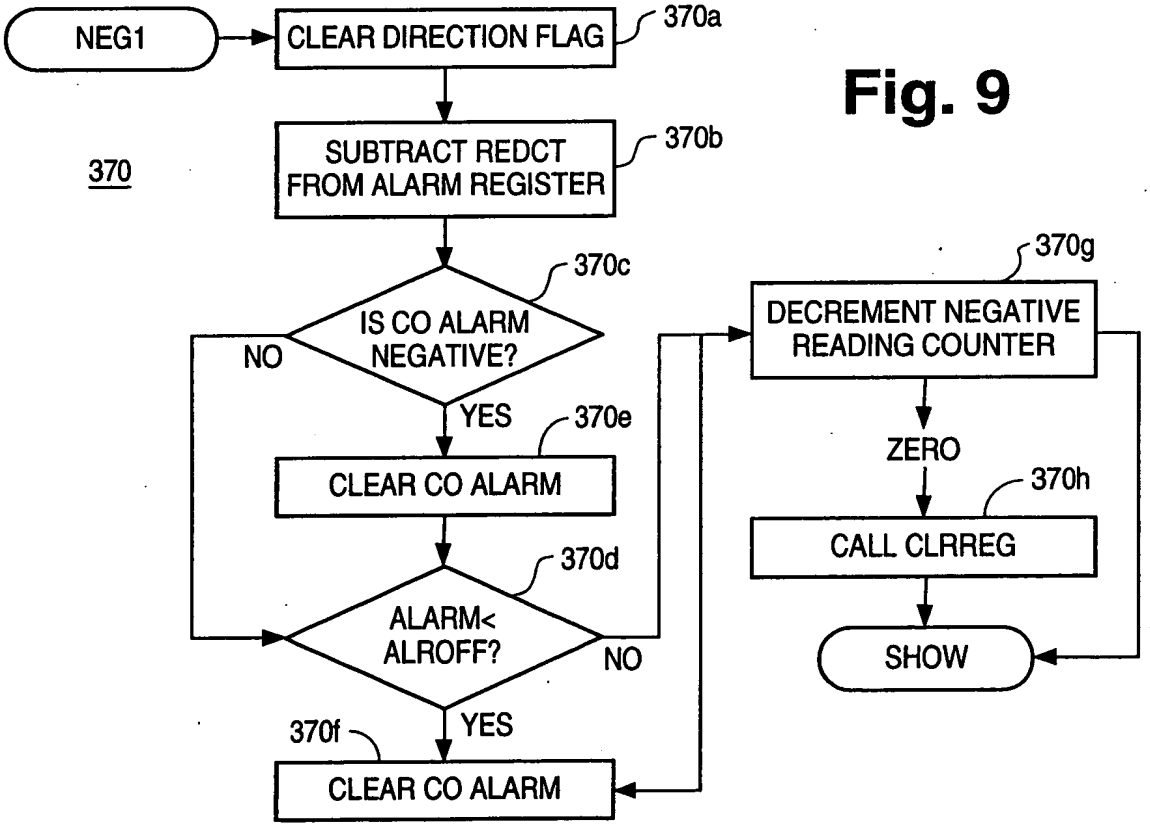

NEG1
CLEAR DIRECTION FLAG
370a
370
SUBTRACT REDCT FROM ALARM REGISTER
370b
370c
IS CO ALARM NEGATIVE?
NO
YES
370e
CLEAR CO ALARM
370d
ALARM< ALROFF?
NO
YES
370f
CLEAR CO ALARM
370g
DECREMENT NEGATIVE READING COUNTER
ZERO
370h
CALL CLRREG
SHOW

Fig. 10

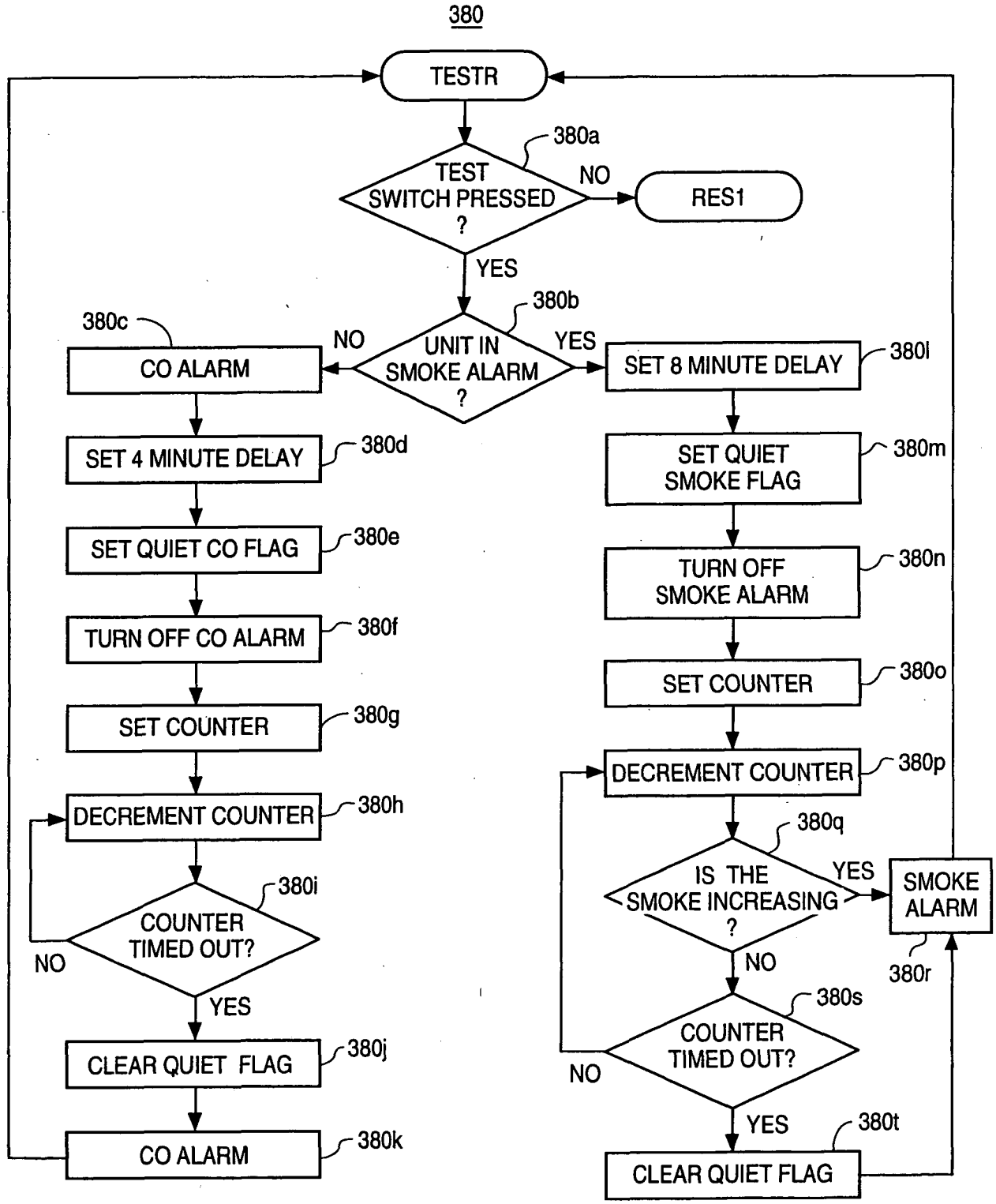
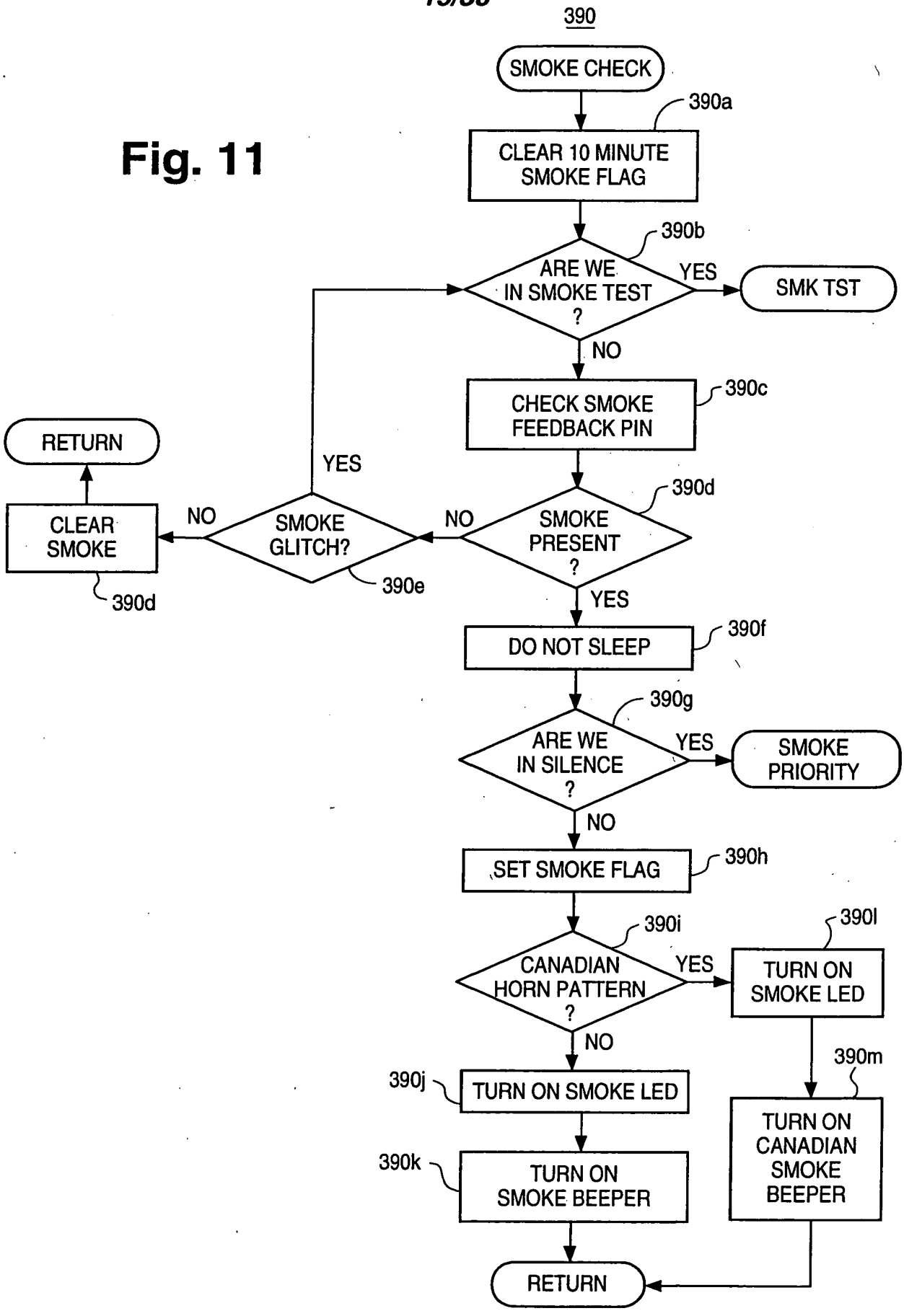

380
TESTR
380a
TEST SWITCH PRESSED ?
NO
RES1
YES
380b
UNIT IN SMOKE ALARM ?
NO
YES
380c
CO ALARM
SET 8 MINUTE DELAY
380l
SET 4 MINUTE DELAY
380d
SET QUIET SMOKE FLAG
380m
SET QUIET CO FLAG
380e
TURN OFF SMOKE ALARM
380n
TURN OFF CO ALARM
380f
SET COUNTER
380o
SET COUNTER
380g
DECREMENT COUNTER
380p
DECREMENT COUNTER
380h
380q
IS THE SMOKE INCREASING ?
YES
SMOKE ALARM
380r
380i
COUNTER TIMED OUT?
NO
NO
YES
380s
COUNTER TIMED OUT?
NO
YES
380j
380t
CLEAR QUIET FLAG
CLEAR QUIET FLAG
380k
CO ALARM

Fig. 11


390
SMOKE CHECK
390a
CLEAR 10 MINUTE SMOKE FLAG
390b
ARE WE IN SMOKE TEST ?
YES
SMK TST
NO
CHECK SMOKE FEEDBACK PIN
390c
SMOKE PRESENT ?
390d
NO
SMOKE GLITCH?
390e
YES
NO
CLEAR SMOKE
390d
RETURN
YES
DO NOT SLEEP
390f
ARE WE IN SILENCE ?
390g
YES
SMOKE PRIORITY
NO
SET SMOKE FLAG
390h
CANADIAN HORN PATTERN ?
390i
YES
TURN ON SMOKE LED
390l
NO
390j
TURN ON SMOKE LED
390m
TURN ON CANADIAN SMOKE BEEPER
390k
TURN ON SMOKE BEEPER
RETURN

400

Fig. 12

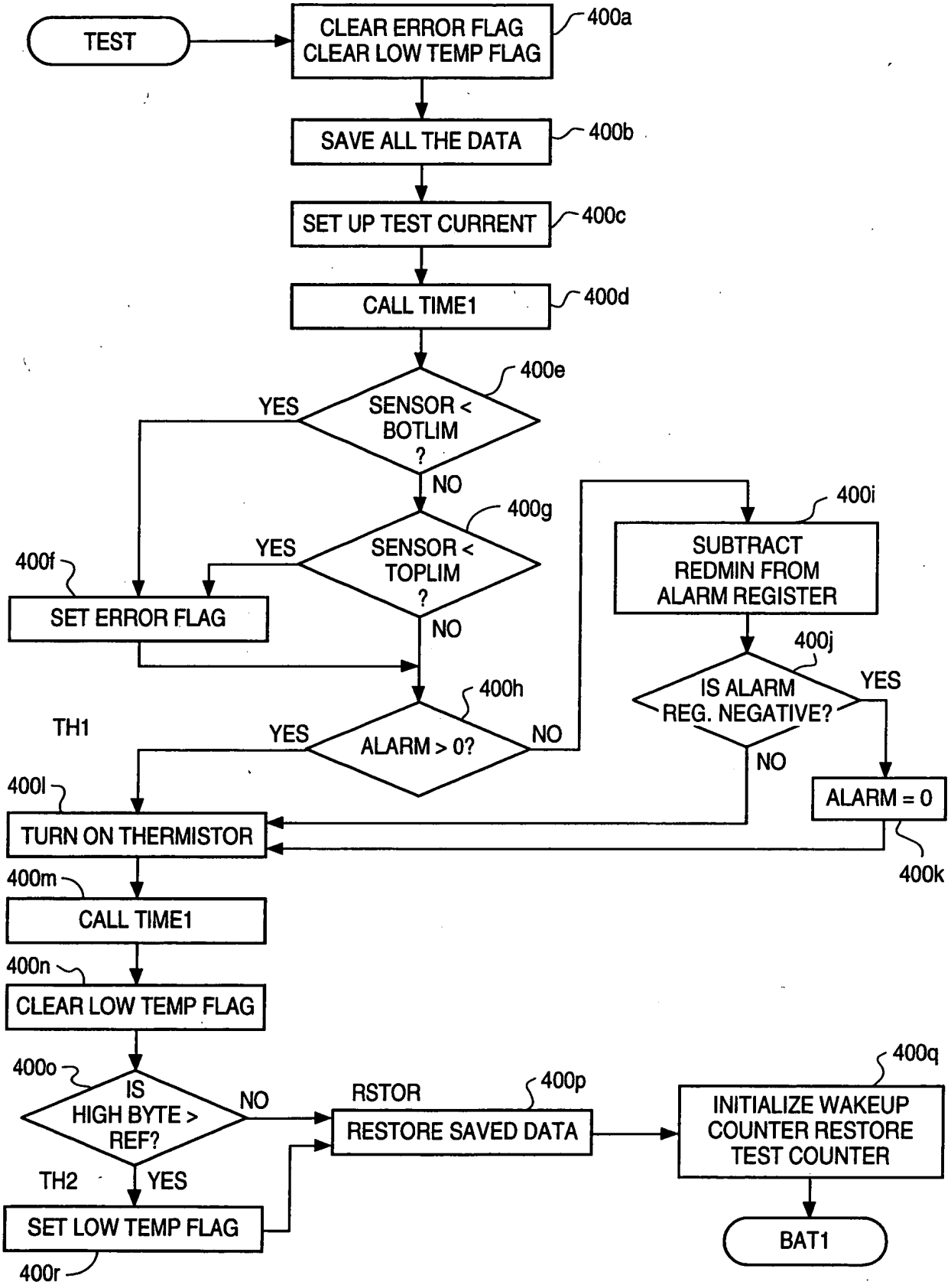

TEST
CLEAR ERROR FLAG
CLEAR LOW TEMP FLAG
400a
SAVE ALL THE DATA
400b
SET UP TEST CURRENT
400c
CALL TIME1
400d
SENSOR < BOTLIM ?
400e
YES
NO
SENSOR < TOPLIM ?
400g
YES
NO
400f
SET ERROR FLAG
ALARM > 0?
400h
TH1
YES
NO
SUBTRACT REDMIN FROM ALARM REGISTER
400i
IS ALARM REG. NEGATIVE?
400j
YES
NO
ALARM = 0
400k
400l
TURN ON THERMISTOR
400m
CALL TIME1
400n
CLEAR LOW TEMP FLAG
400o
IS HIGH BYTE > REF?
NO
RSTOR
400p
RESTORE SAVED DATA
400q
INITIALIZE WAKEUP COUNTER RESTORE TEST COUNTER
TH2
YES
SET LOW TEMP FLAG
400r
BAT1

Fig. 13

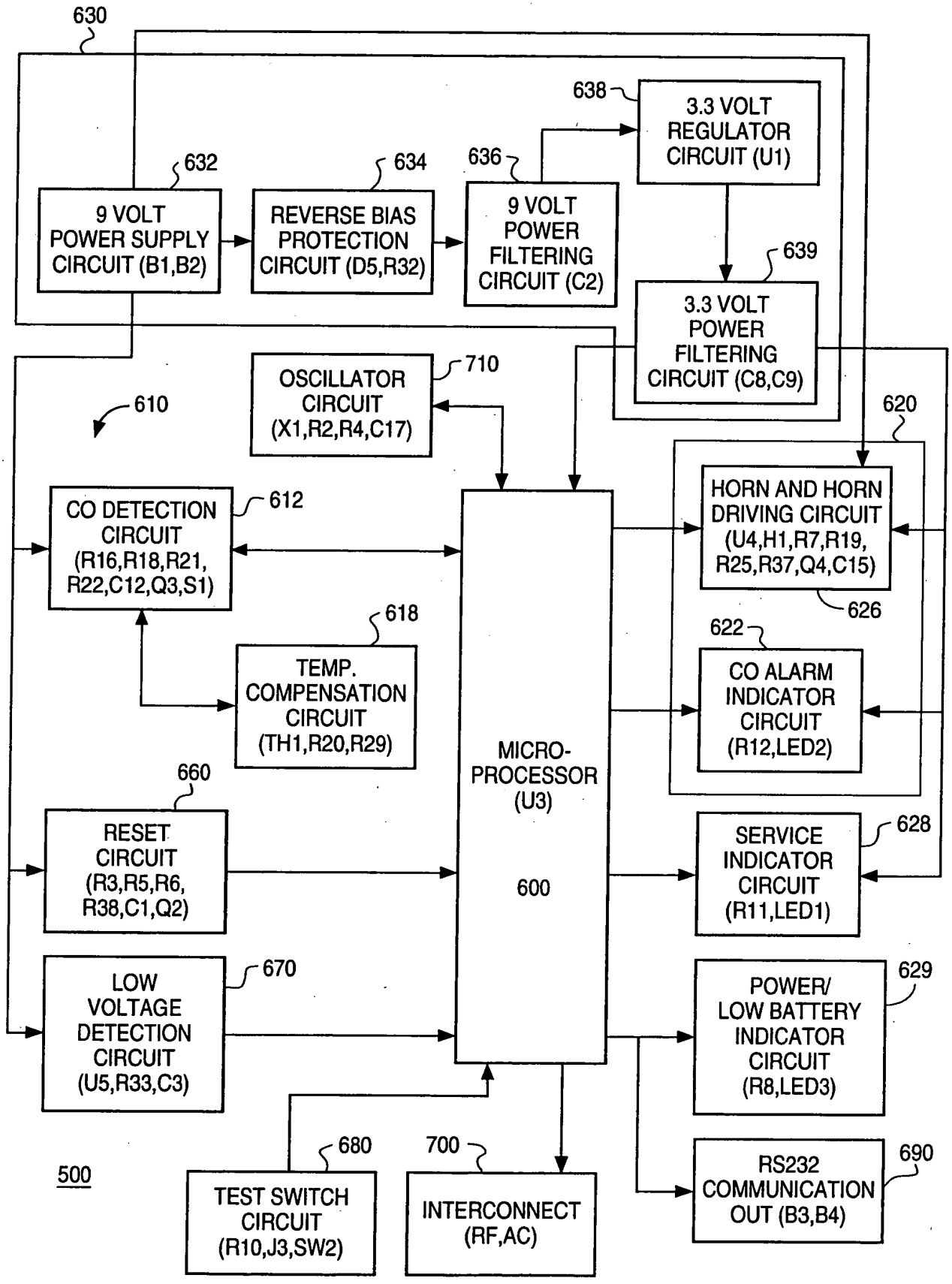

630
638
3.3 VOLT REGULATOR CIRCUIT (U1)
632
634
636
9 VOLT POWER SUPPLY CIRCUIT (B1,B2)
REVERSE BIAS PROTECTION CIRCUIT (D5,R32)
9 VOLT POWER FILTERING CIRCUIT (C2)
639
3.3 VOLT POWER FILTERING CIRCUIT (C8,C9)
OSCILLATOR CIRCUIT (X1,R2,R4,C17)
710
610
620
HORN AND HORN DRIVING CIRCUIT (U4,H1,R7,R19, R25,R37,Q4,C15)
626
CO DETECTION CIRCUIT (R16,R18,R21, R22,C12,Q3,S1)
612
618
622
TEMP. COMPENSATION CIRCUIT (TH1,R20,R29)
CO ALARM INDICATOR CIRCUIT (R12,LED2)
MICRO-PROCESSOR (U3)
600
660
RESET CIRCUIT (R3,R5,R6, R38,C1,Q2)
SERVICE INDICATOR CIRCUIT (R11,LED1)
628
LOW VOLTAGE DETECTION CIRCUIT (U5,R33,C3)
670
POWER/ LOW BATTERY INDICATOR CIRCUIT (R8,LED3)
629
500
680
700
TEST SWITCH CIRCUIT (R10,J3,SW2)
INTERCONNECT (RF,AC)
RS232 COMMUNICATION OUT (B3,B4)
690

Fig. 14

Fig. 14-1	Fig. 14-2	Fig. 14-3

Fig. 14-1

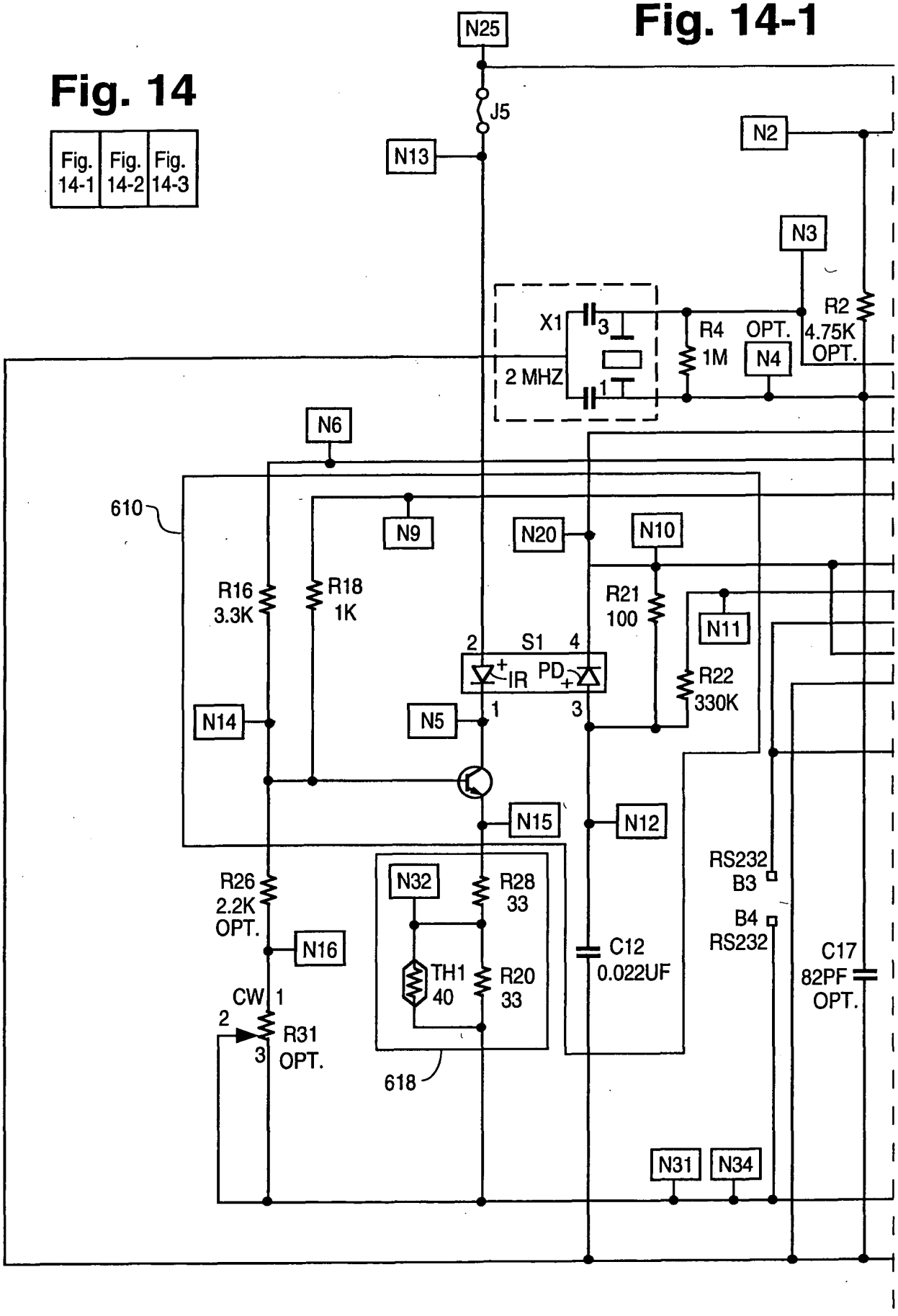


Fig. 14-2

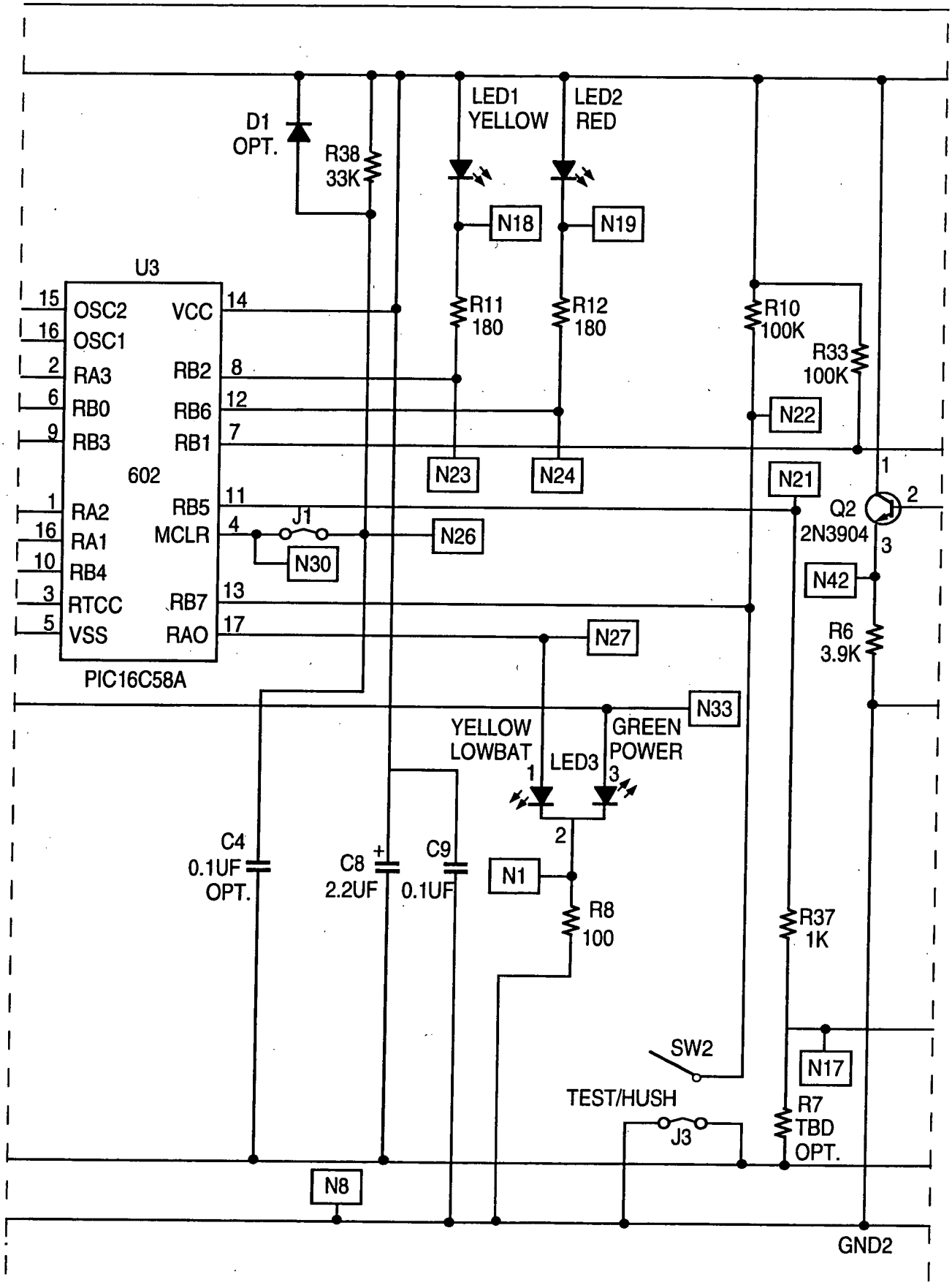

D1
OPT.
R38
33K
LED1
YELLOW
LED2
RED
N18
N19
U3
15
OSC2
VCC
14
16
OSC1
2
RA3
RB2
8
6
RB0
RB6
12
9
RB3
RB1
7
602
1
RA2
RB5
11
16
RA1
MCLR
4
J1
N30
N26
10
RB4
3
RTCC
RB7
13
5
VSS
RAO
17
PIC16C58A
R11
180
R12
180
R10
100K
R33
100K
N22
N23
N24
N21
Q2
2N3904
1
2
3
N42
R6
3.9K
N27
N33
YELLOW
LOWBAT
LED3
GREEN
POWER
1
3
2
C4
0.1UF
OPT.
C8
2.2UF
C9
0.1UF
N1
R8
100
R37
1K
SW2
N17
TEST/HUSH
J3
R7
TBD
OPT.
N8
GND2

Fig. 14-3

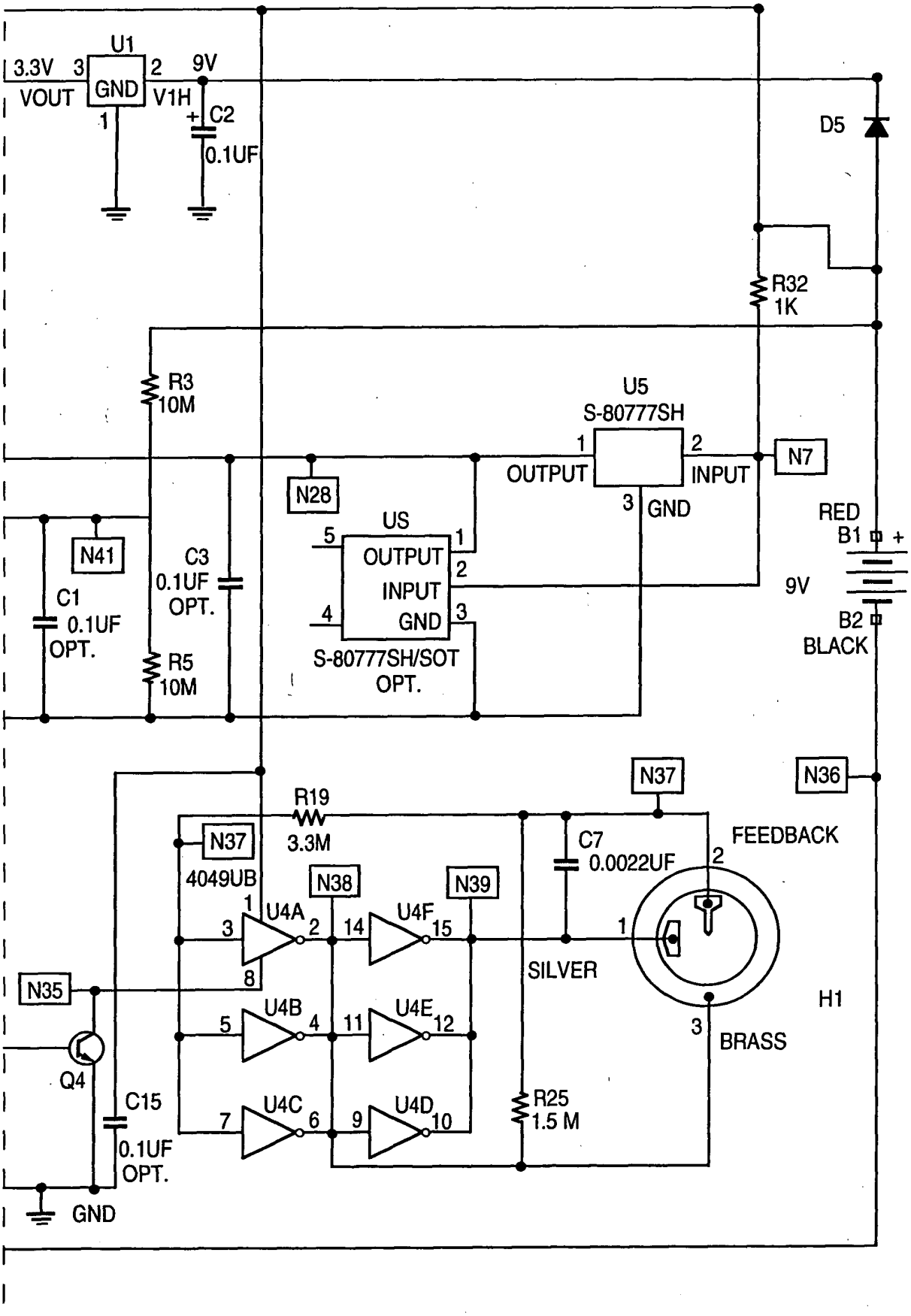

U1
3.3V
VOUT
3
GND
1
2
V1H
9V
C2
0.1UF
D5
R32
1K
R3
10M
U5
S-80777SH
1
OUTPUT
2
INPUT
3
GND
N7
N28
US
5
OUTPUT
1
INPUT
2
4
GND
3
S-80777SH/SOT
OPT.
RED
B1
+
9V
B2
BLACK
N41
C1
0.1UF
OPT.
C3
0.1UF
OPT.
R5
10M
N37
N36
R19
3.3M
N37
4049UB
N38
N39
C7
0.0022UF
FEEDBACK
U4A
U4F
SILVER
H1
N35
U4B
U4E
BRASS
Q4
C15
0.1UF
OPT.
U4C
U4D
R25
1.5 M
GND

Fig. 15a

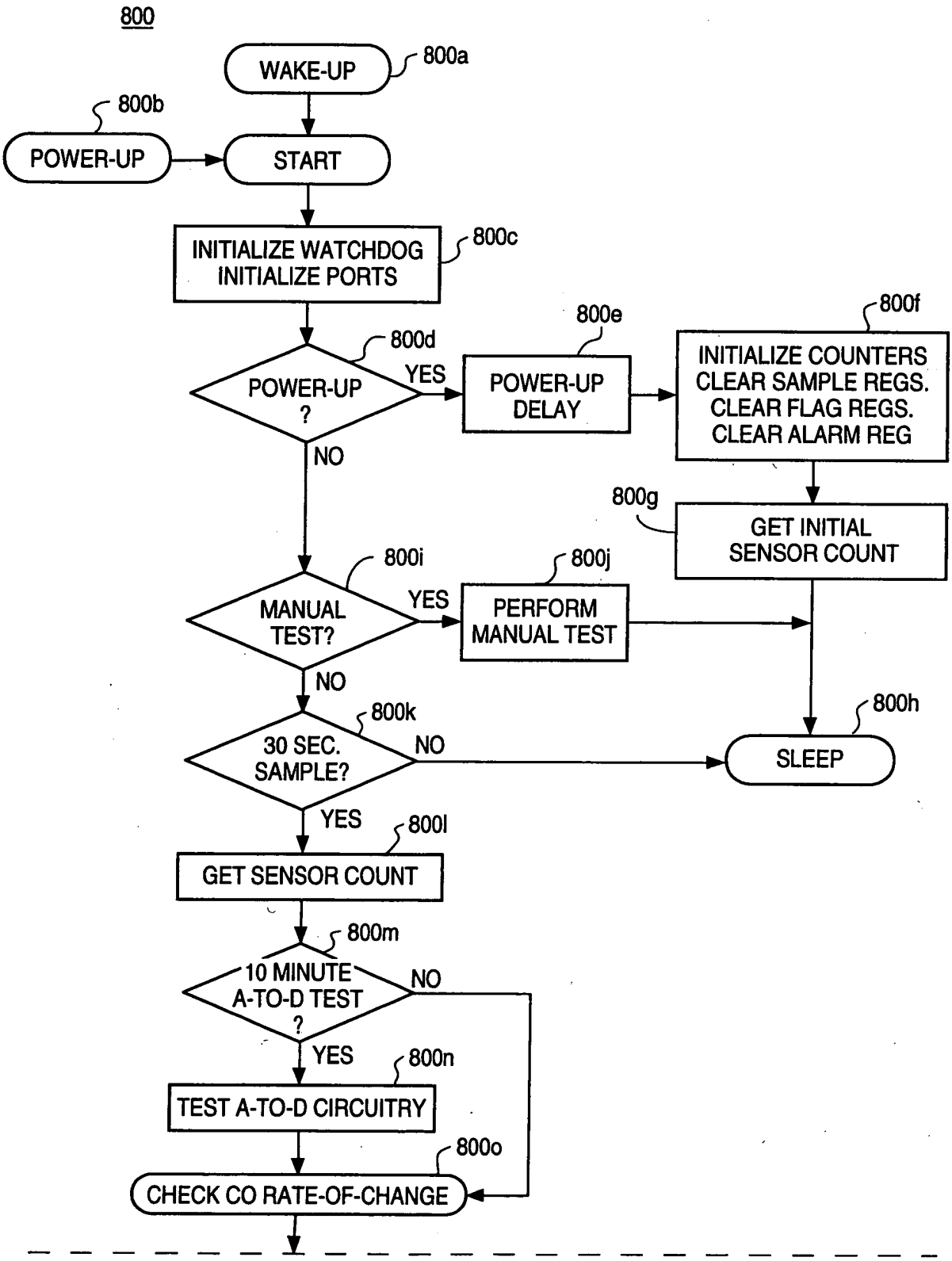

800
WAKE-UP
800a
800b
POWER-UP
START
INITIALIZE WATCHDOG
INITIALIZE PORTS
800c
800d
POWER-UP ?
YES
800e
POWER-UP DELAY
800f
INITIALIZE COUNTERS
CLEAR SAMPLE REGS.
CLEAR FLAG REGS.
CLEAR ALARM REG
NO
800g
GET INITIAL SENSOR COUNT
800i
MANUAL TEST?
YES
800j
PERFORM MANUAL TEST
NO
800k
30 SEC. SAMPLE?
NO
800h
SLEEP
YES
800l
GET SENSOR COUNT
800m
10 MINUTE A-TO-D TEST ?
NO
YES
800n
TEST A-TO-D CIRCUITRY
800o
CHECK CO RATE-OF-CHANGE

Fig. 15b

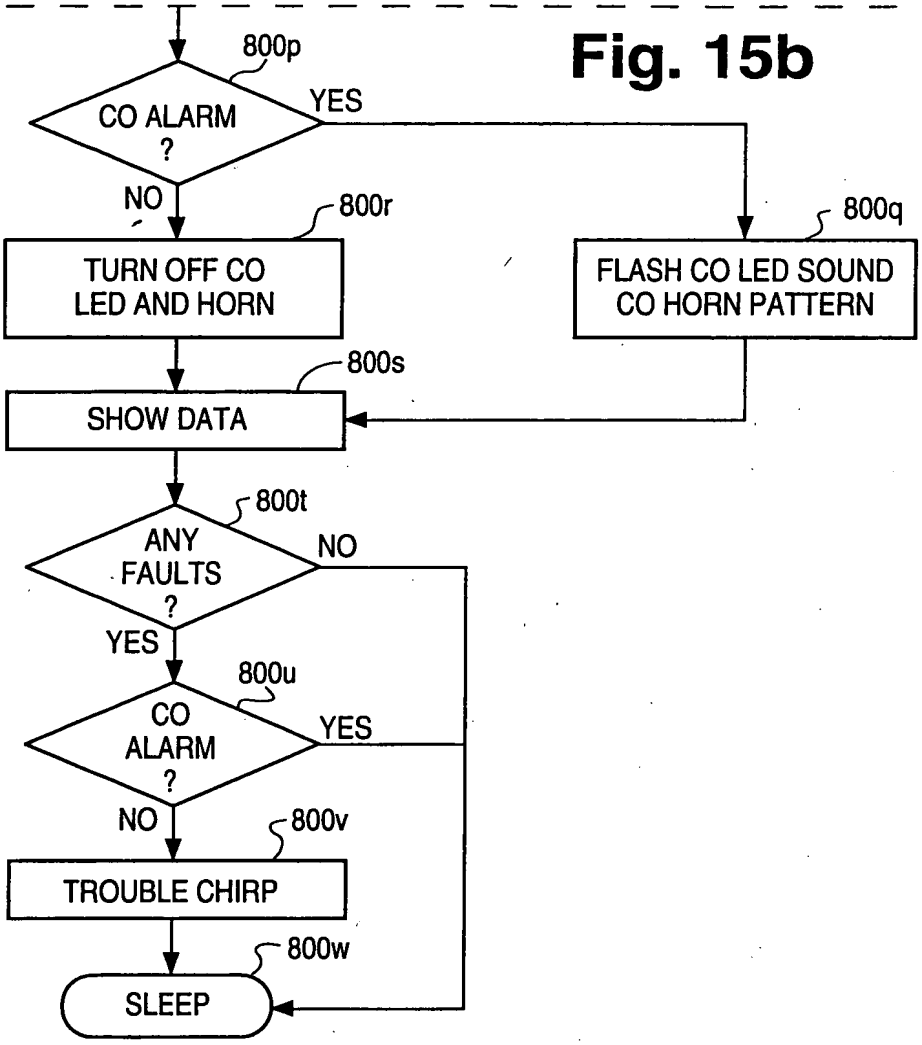

800p
CO ALARM ?
YES
NO
800r
TURN OFF CO LED AND HORN
800q
FLASH CO LED SOUND CO HORN PATTERN
800s
SHOW DATA
800t
ANY FAULTS ?
NO
YES
800u
CO ALARM ?
YES
NO
800v
TROUBLE CHIRP
800w
SLEEP

Fig. 16

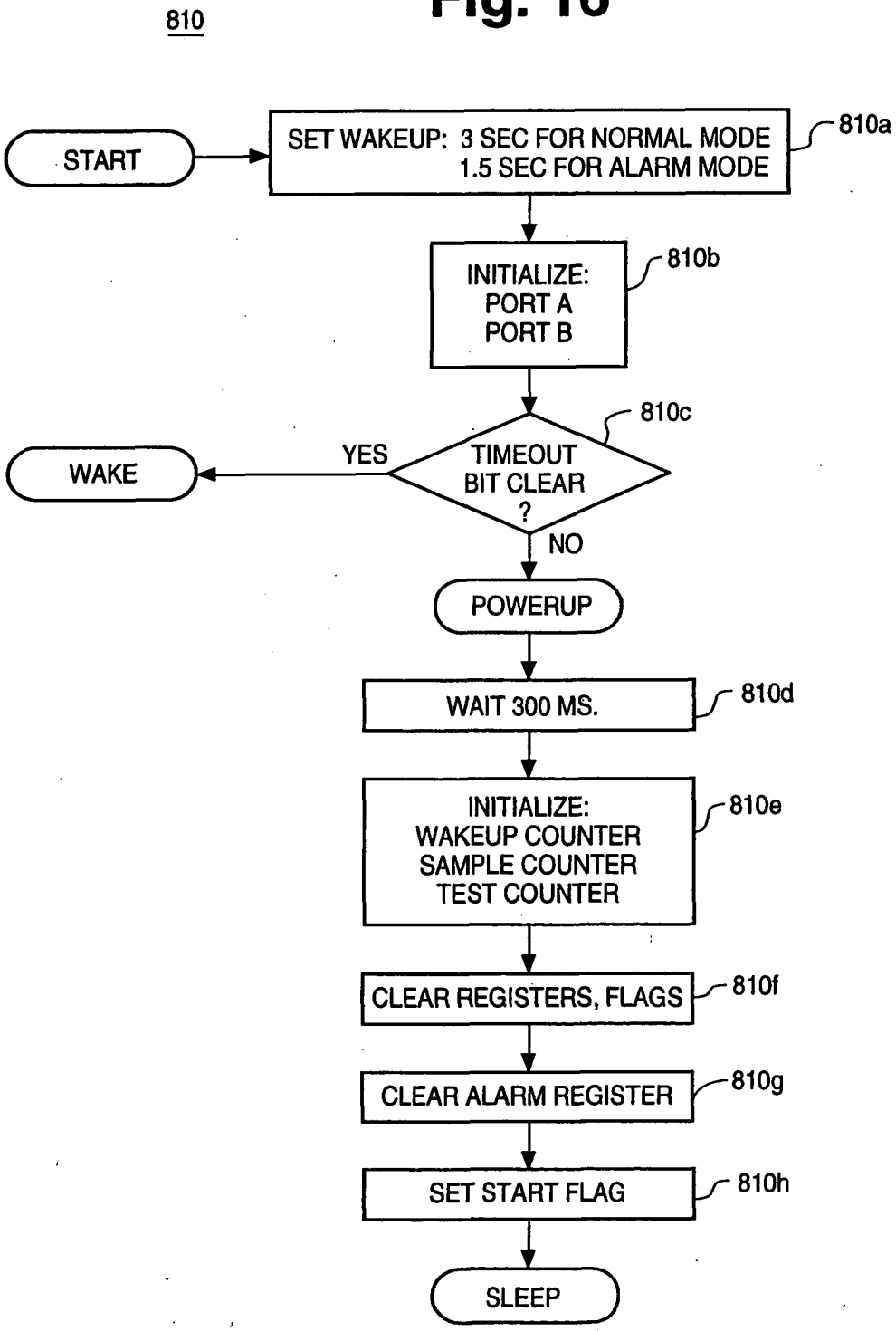

810
START
SET WAKEUP: 3 SEC FOR NORMAL MODE
1.5 SEC FOR ALARM MODE
810a
INITIALIZE:
PORT A
PORT B
810b
TIMEOUT
BIT CLEAR
?
810c
YES
WAKE
NO
POWERUP
WAIT 300 MS.
810d
INITIALIZE:
WAKEUP COUNTER
SAMPLE COUNTER
TEST COUNTER
810e
CLEAR REGISTERS, FLAGS
810f
CLEAR ALARM REGISTER
810g
SET START FLAG
810h
SLEEP

Fig. 17

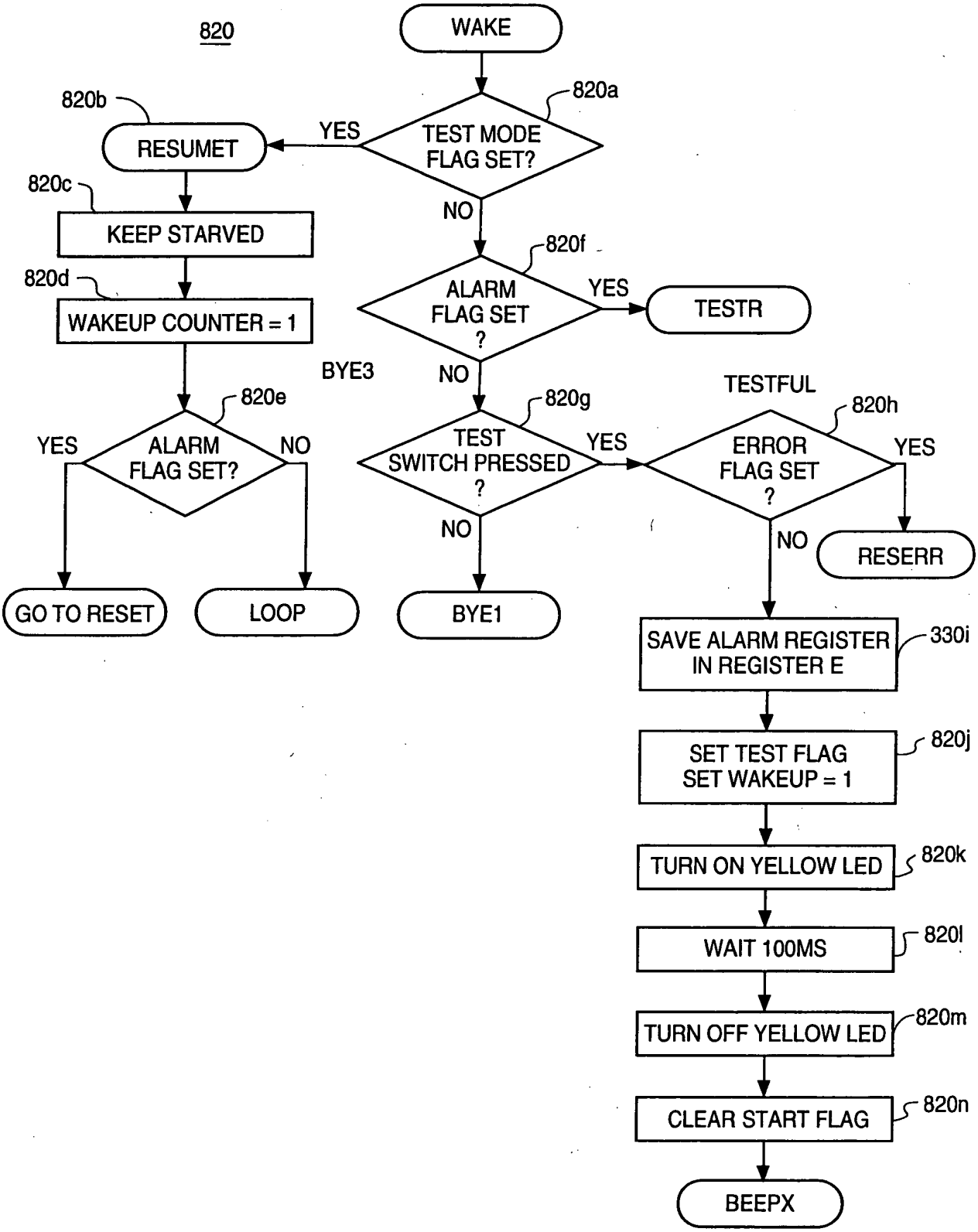

820
WAKE
820a
TEST MODE FLAG SET?
YES
820b
RESUMET
NO
820c
KEEP STARVED
820d
WAKEUP COUNTER = 1
820e
ALARM FLAG SET?
YES
NO
GO TO RESET
LOOP
820f
ALARM FLAG SET ?
YES
TESTR
BYE3
NO
820g
TEST SWITCH PRESSED ?
YES
NO
BYE1
TESTFUL
820h
ERROR FLAG SET ?
YES
NO
RESERR
SAVE ALARM REGISTER IN REGISTER E
330i
SET TEST FLAG SET WAKEUP = 1
820j
TURN ON YELLOW LED
820k
WAIT 100MS
820l
TURN OFF YELLOW LED
820m
CLEAR START FLAG
820n
BEEPX

Fig. 18

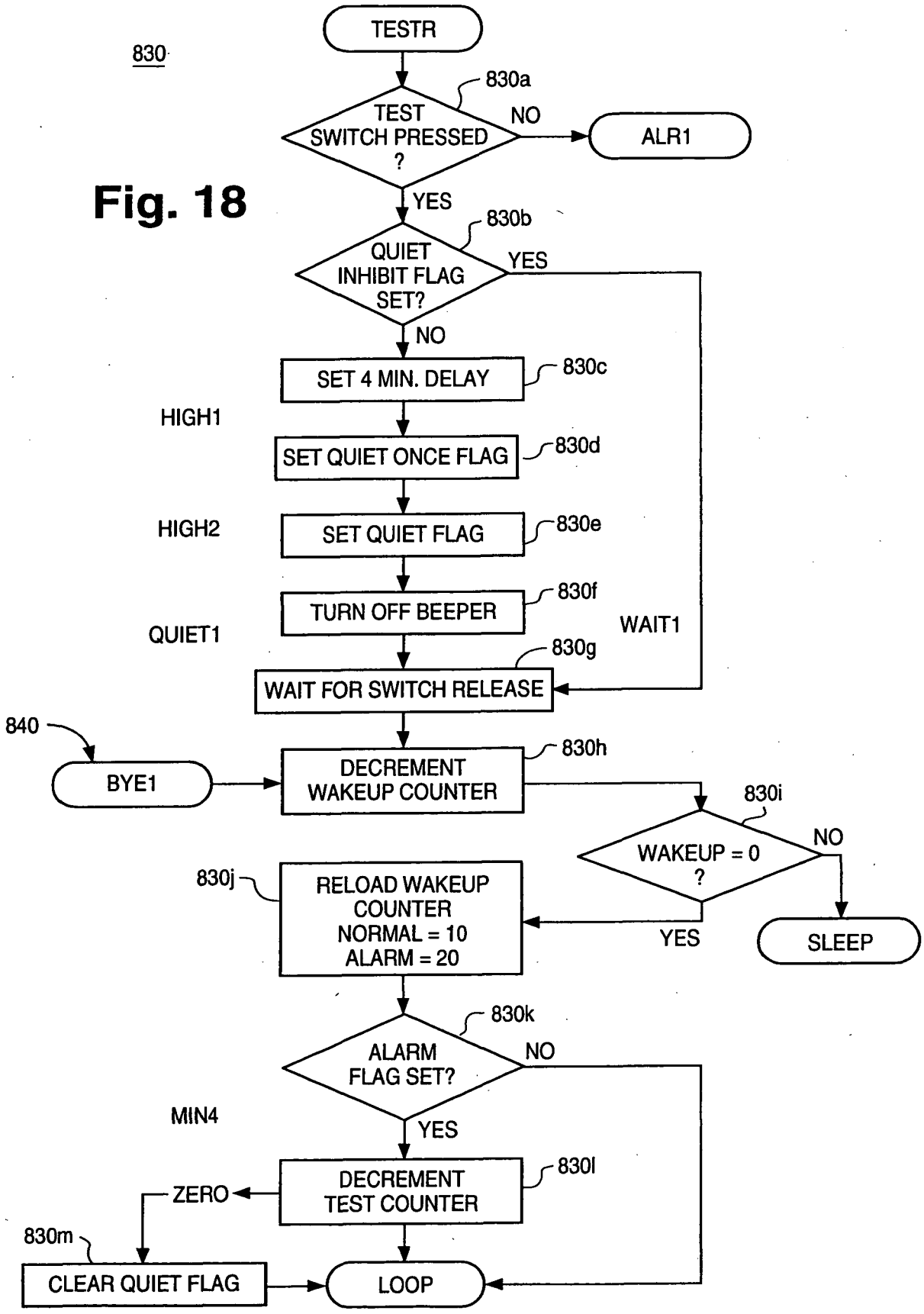

830
TESTR
830a
TEST SWITCH PRESSED ?
NO
ALR1
YES
830b
QUIET INHIBIT FLAG SET?
YES
NO
SET 4 MIN. DELAY
830c
HIGH1
SET QUIET ONCE FLAG
830d
HIGH2
SET QUIET FLAG
830e
TURN OFF BEEPER
830f
QUIET1
WAIT1
WAIT FOR SWITCH RELEASE
830g
840
BYE1
DECREMENT WAKEUP COUNTER
830h
830i
WAKEUP = 0 ?
NO
YES
SLEEP
830j
RELOAD WAKEUP COUNTER
NORMAL = 10
ALARM = 20
830k
ALARM FLAG SET?
NO
MIN4
YES
DECREMENT TEST COUNTER
830l
ZERO
830m
CLEAR QUIET FLAG
LOOP

Fig. 19

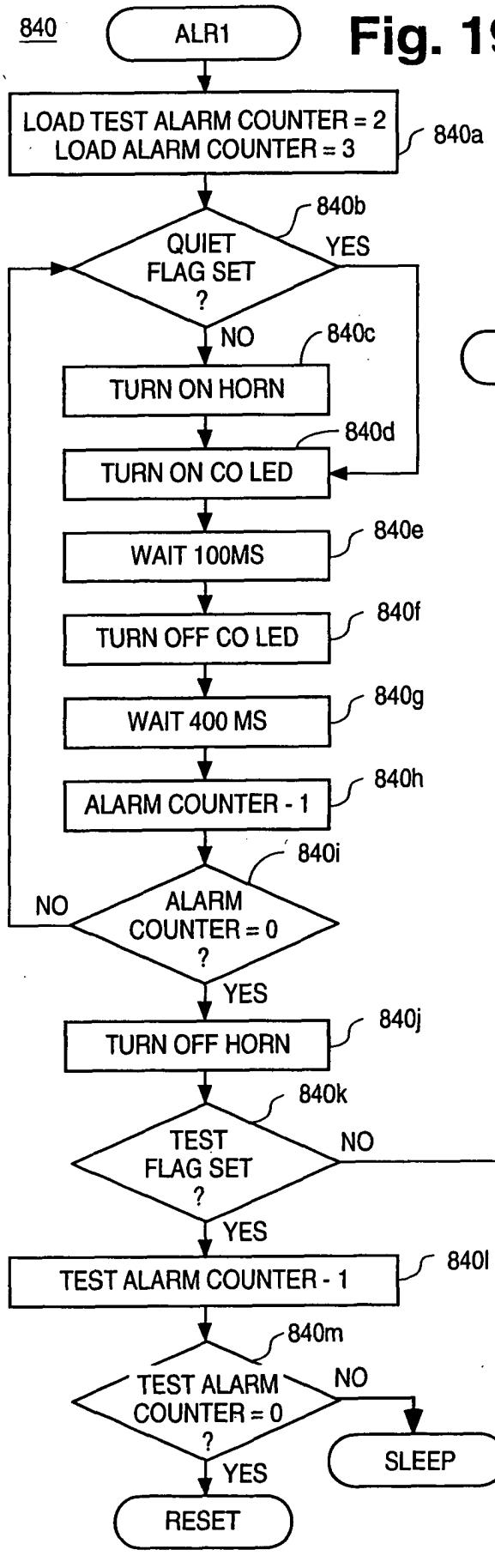

840
ALR1
LOAD TEST ALARM COUNTER = 2
LOAD ALARM COUNTER = 3
840a
840b
QUIET FLAG SET ?
YES
NO
840c
TURN ON HORN
840d
TURN ON CO LED
840e
WAIT 100MS
840f
TURN OFF CO LED
840g
WAIT 400 MS
840h
ALARM COUNTER - 1
840i
NO
ALARM COUNTER = 0 ?
YES
840j
TURN OFF HORN
840k
TEST FLAG SET ?
NO
YES
840l
TEST ALARM COUNTER - 1
840m
TEST ALARM COUNTER = 0 ?
NO
YES
SLEEP
RESET

Fig. 20

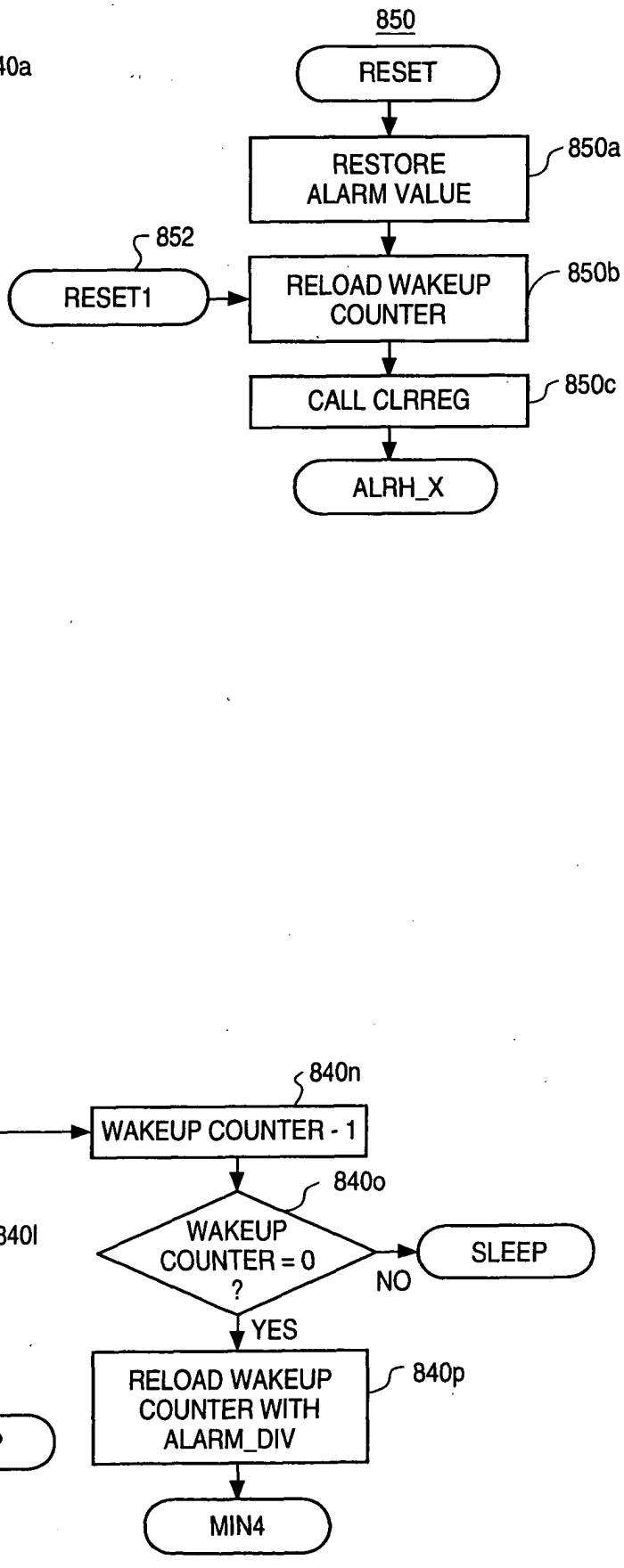

850
RESET
850a
RESTORE ALARM VALUE
852
RESET1
850b
RELOAD WAKEUP COUNTER
850c
CALL CLRREG
ALRH_X
840n
WAKEUP COUNTER - 1
840o
WAKEUP COUNTER = 0 ?
NO
SLEEP
YES
840p
RELOAD WAKEUP COUNTER WITH ALARM_DIV
MIN4

Fig. 21

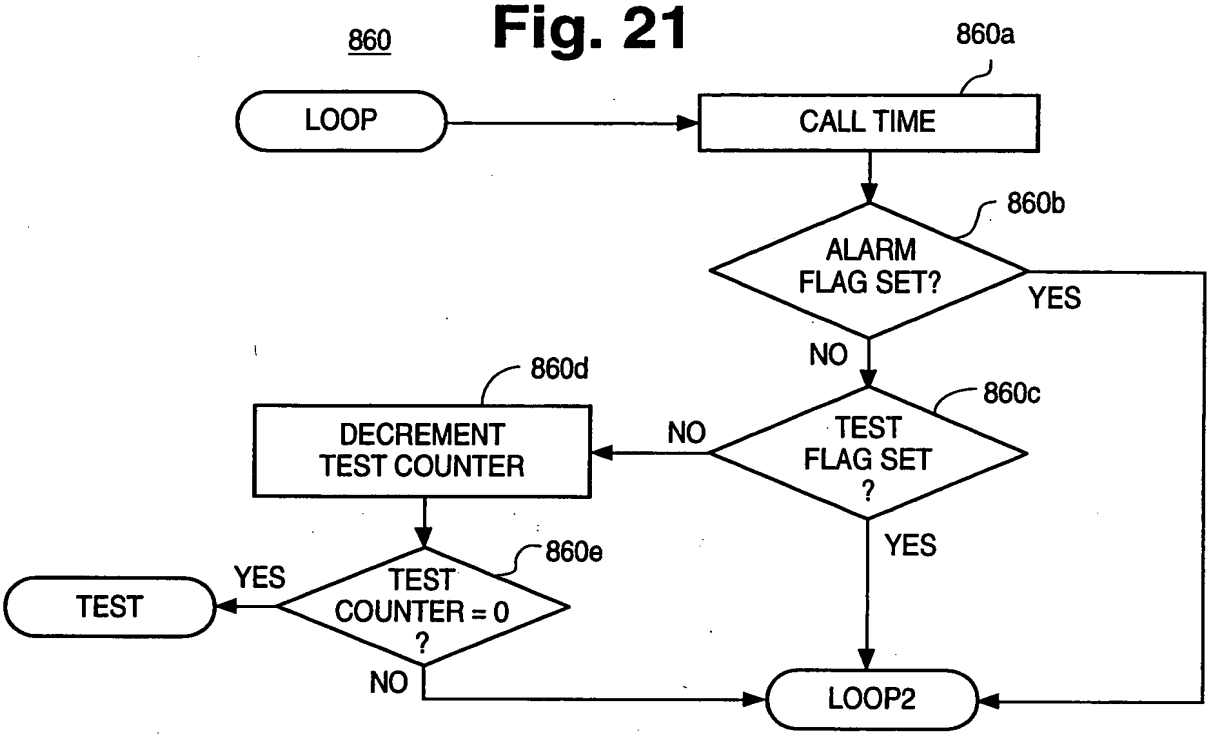

860
LOOP
860a
CALL TIME
860b
ALARM FLAG SET?
YES
NO
860c
TEST FLAG SET ?
NO
860d
DECREMENT TEST COUNTER
YES
860e
TEST COUNTER = 0 ?
YES
TEST
NO
LOOP2

Fig. 22

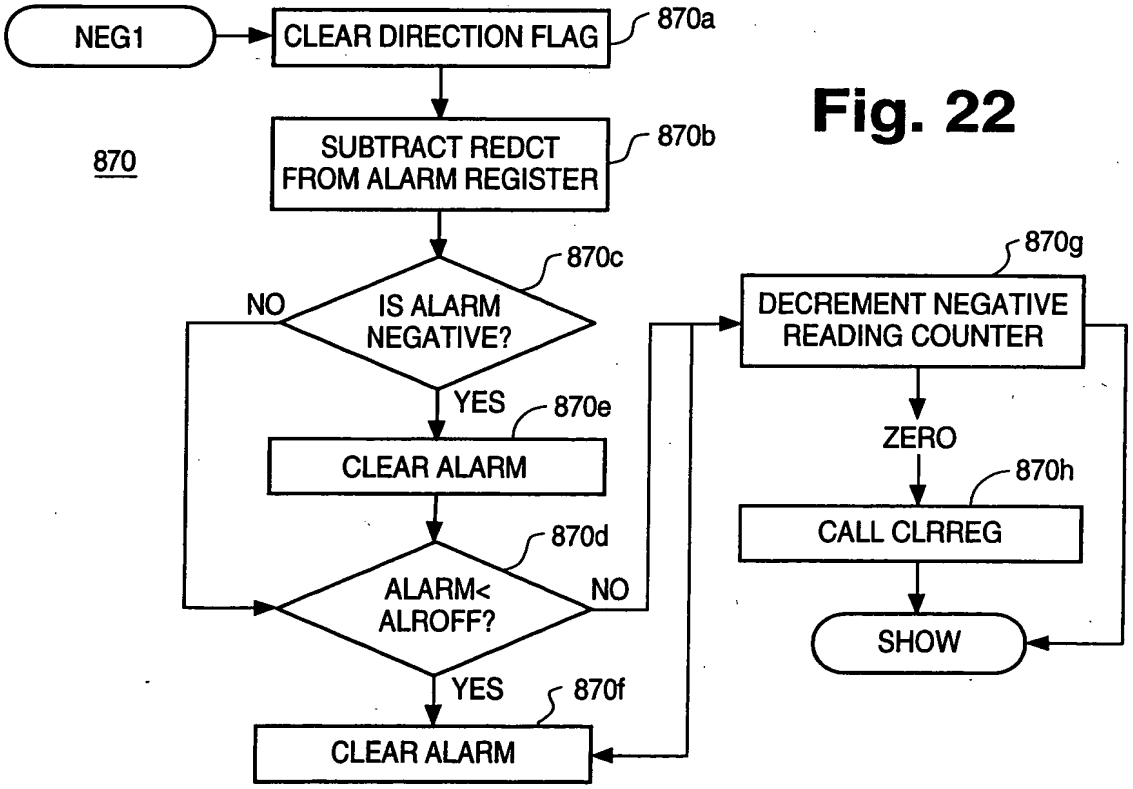

NEG1
CLEAR DIRECTION FLAG
870a
870
SUBTRACT REDCT FROM ALARM REGISTER
870b
870c
NO
IS ALARM NEGATIVE?
YES
870e
CLEAR ALARM
870d
ALARM< ALROFF?
NO
YES
870f
CLEAR ALARM
870g
DECREMENT NEGATIVE READING COUNTER
ZERO
870h
CALL CLRREG
SHOW

Fig. 23

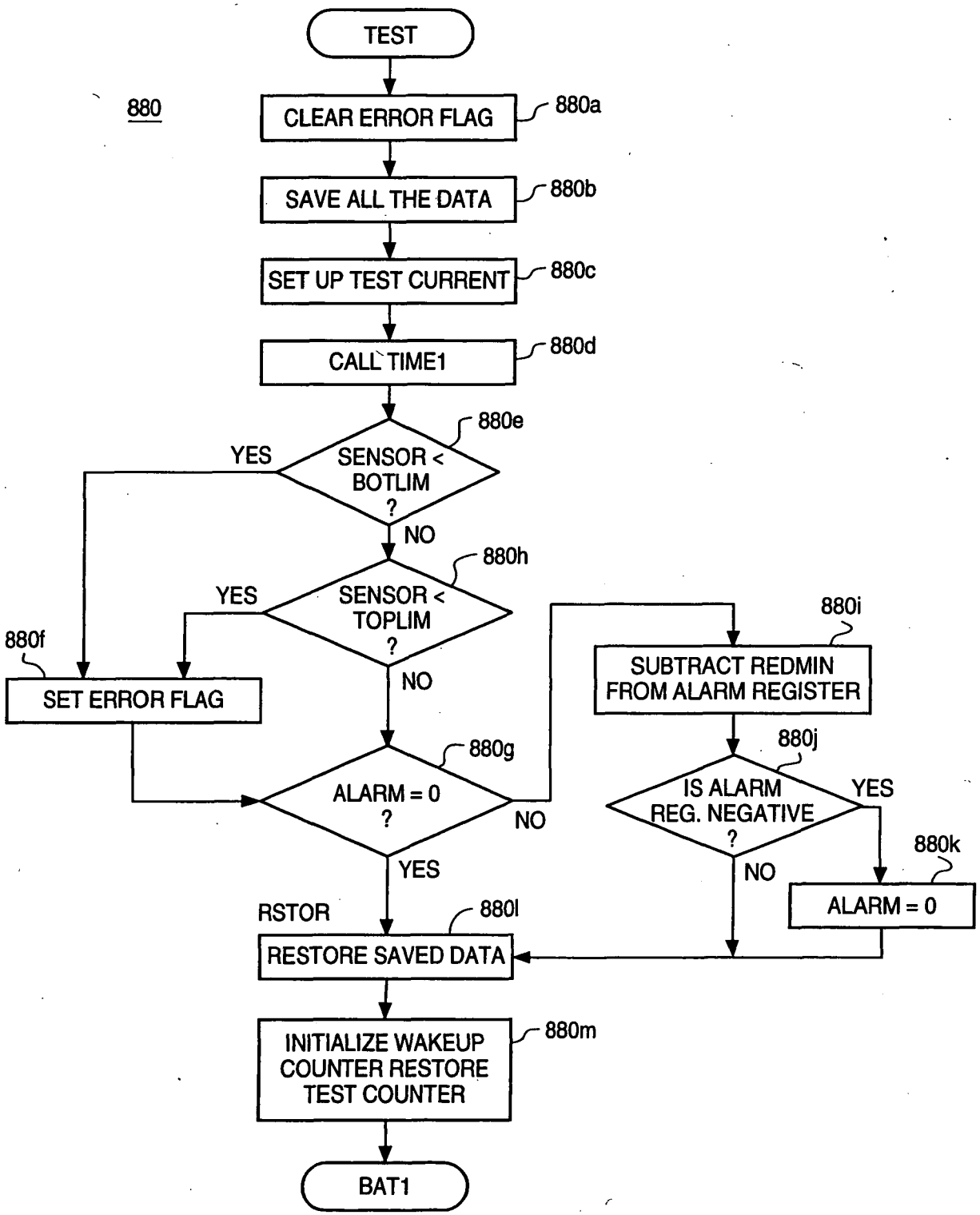

TEST
880
CLEAR ERROR FLAG
880a
SAVE ALL THE DATA
880b
SET UP TEST CURRENT
880c
CALL TIME1
880d
880e
YES
SENSOR < BOTLIM ?
NO
880h
YES
SENSOR < TOPLIM ?
880f
SET ERROR FLAG
NO
880g
ALARM = 0 ?
NO
YES
880i
SUBTRACT REDMIN FROM ALARM REGISTER
880j
IS ALARM REG. NEGATIVE ?
YES
NO
880k
ALARM = 0
RSTOR
880l
RESTORE SAVED DATA
INITIALIZE WAKEUP COUNTER RESTORE TEST COUNTER
880m
BAT1

Fig. 24

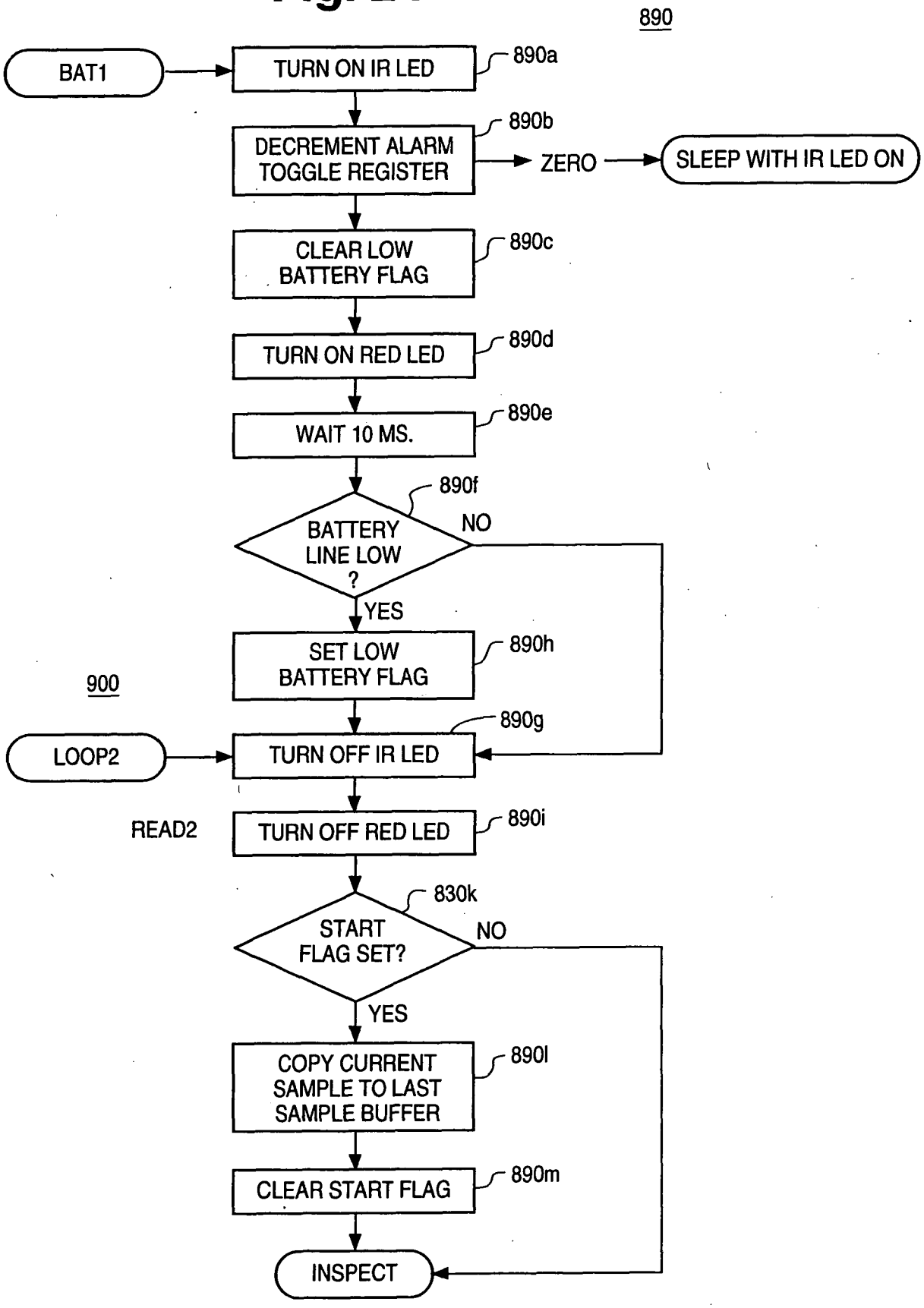

890
BAT1
TURN ON IR LED
890a
DECREMENT ALARM TOGGLE REGISTER
890b
ZERO
SLEEP WITH IR LED ON
CLEAR LOW BATTERY FLAG
890c
TURN ON RED LED
890d
WAIT 10 MS.
890e
BATTERY LINE LOW ?
890f
NO
YES
SET LOW BATTERY FLAG
890h
900
LOOP2
TURN OFF IR LED
890g
READ2
TURN OFF RED LED
890i
START FLAG SET?
830k
NO
YES
COPY CURRENT SAMPLE TO LAST SAMPLE BUFFER
890l
CLEAR START FLAG
890m
INSPECT

Fig. 25

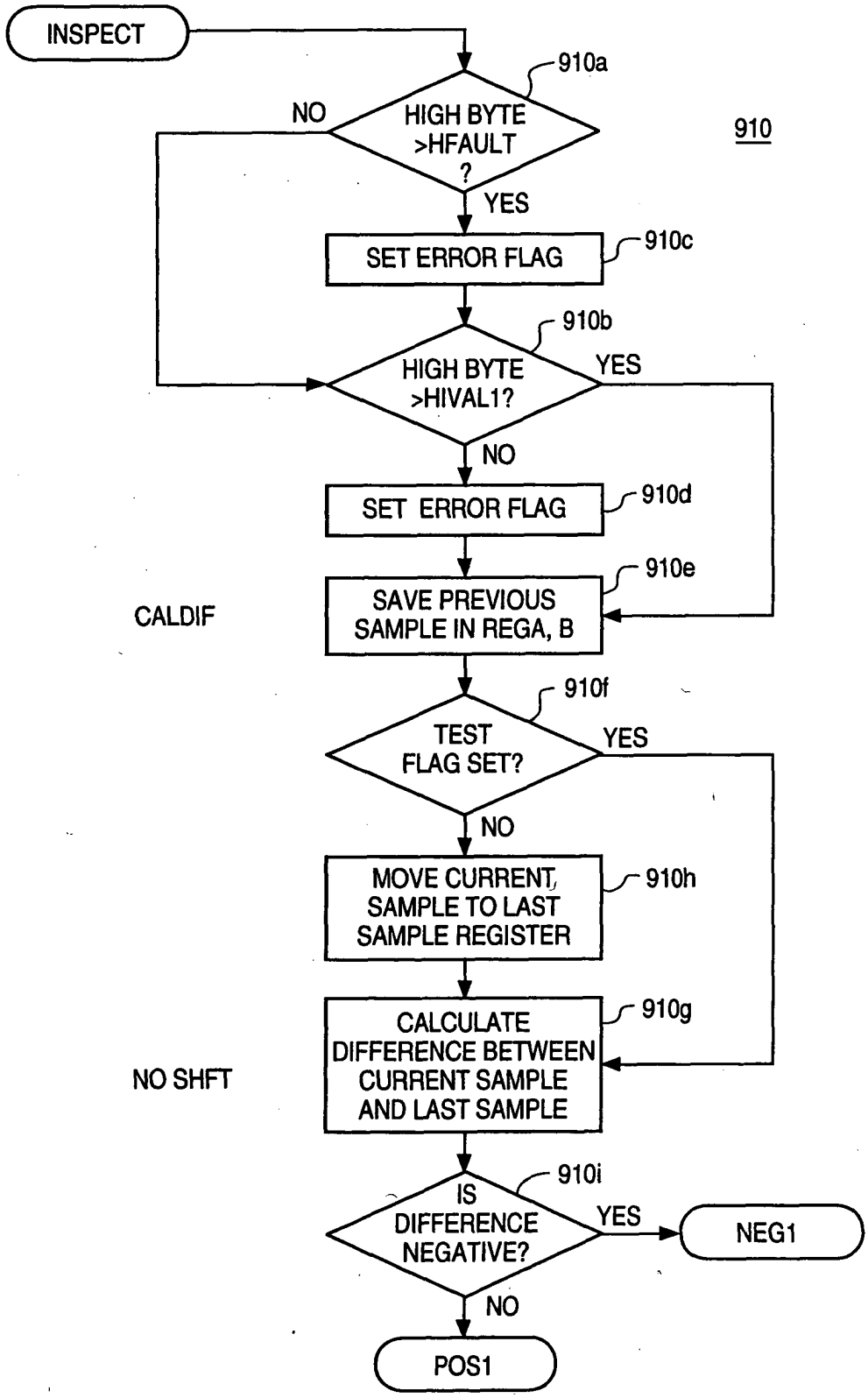

INSPECT
910a
HIGH BYTE >HFAULT ?
NO
YES
910
SET ERROR FLAG
910c
910b
HIGH BYTE >HIVAL1?
YES
NO
SET ERROR FLAG
910d
910e
CALDIF
SAVE PREVIOUS SAMPLE IN REGA, B
910f
TEST FLAG SET?
YES
NO
MOVE CURRENT SAMPLE TO LAST SAMPLE REGISTER
910h
910g
NO SHFT
CALCULATE DIFFERENCE BETWEEN CURRENT SAMPLE AND LAST SAMPLE
910i
IS DIFFERENCE NEGATIVE?
YES
NEG1
NO
POS1

Fig. 26

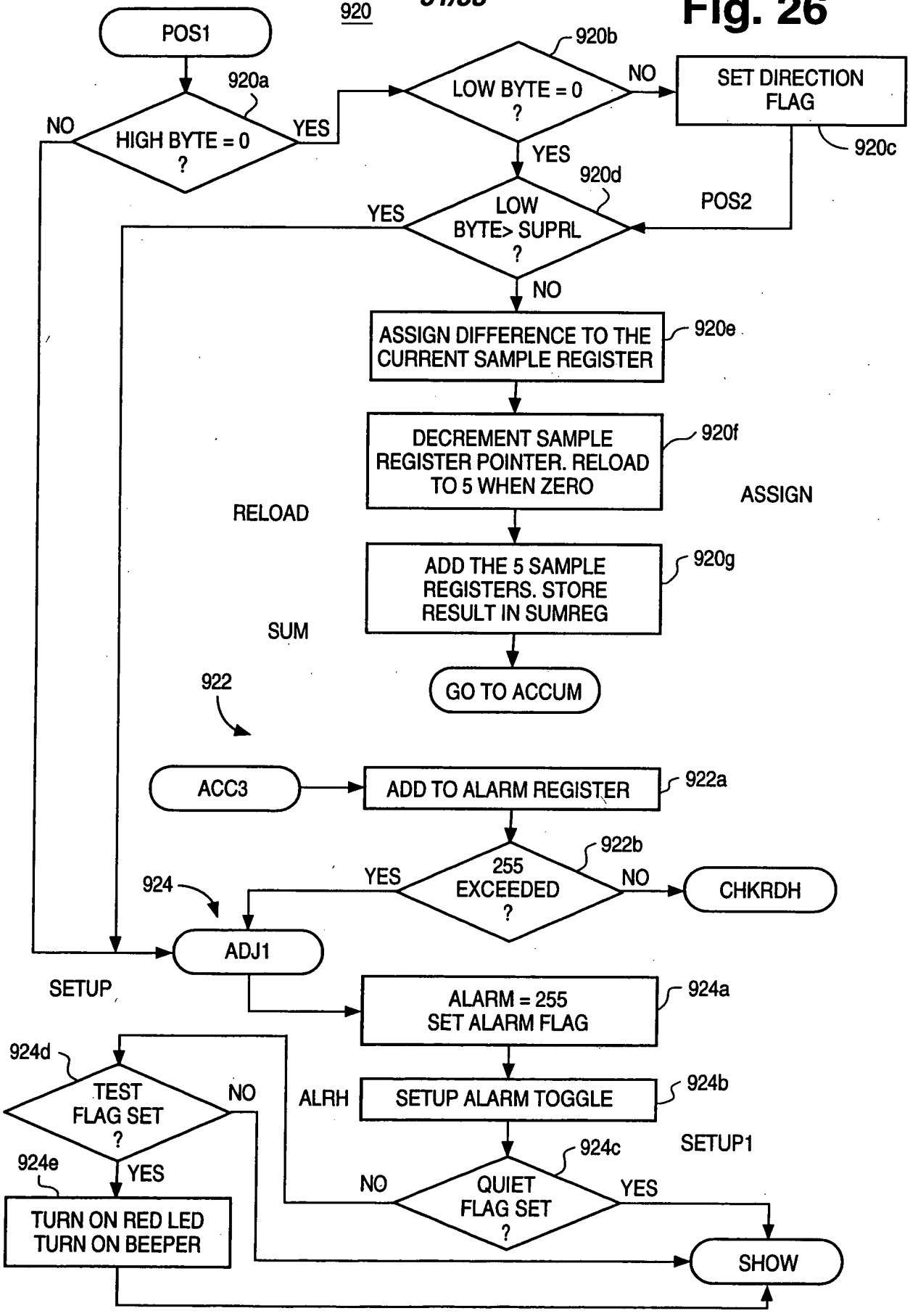

920
POS1
920a
HIGH BYTE = 0 ?
NO
YES
920b
LOW BYTE = 0 ?
NO
SET DIRECTION FLAG
920c
YES
920d
LOW BYTE> SUPRL ?
YES
POS2
NO
ASSIGN DIFFERENCE TO THE CURRENT SAMPLE REGISTER
920e
DECREMENT SAMPLE REGISTER POINTER. RELOAD TO 5 WHEN ZERO
920f
RELOAD
ASSIGN
ADD THE 5 SAMPLE REGISTERS. STORE RESULT IN SUMREG
920g
SUM
GO TO ACCUM
922
ACC3
ADD TO ALARM REGISTER
922a
922b
255 EXCEEDED ?
YES
NO
CHKRDH
924
ADJ1
SETUP
ALARM = 255 SET ALARM FLAG
924a
924d
TEST FLAG SET ?
NO
ALRH
SETUP ALARM TOGGLE
924b
924e
YES
TURN ON RED LED TURN ON BEEPER
924c
QUIET FLAG SET ?
NO
YES
SETUP1
SHOW

Fig. 27

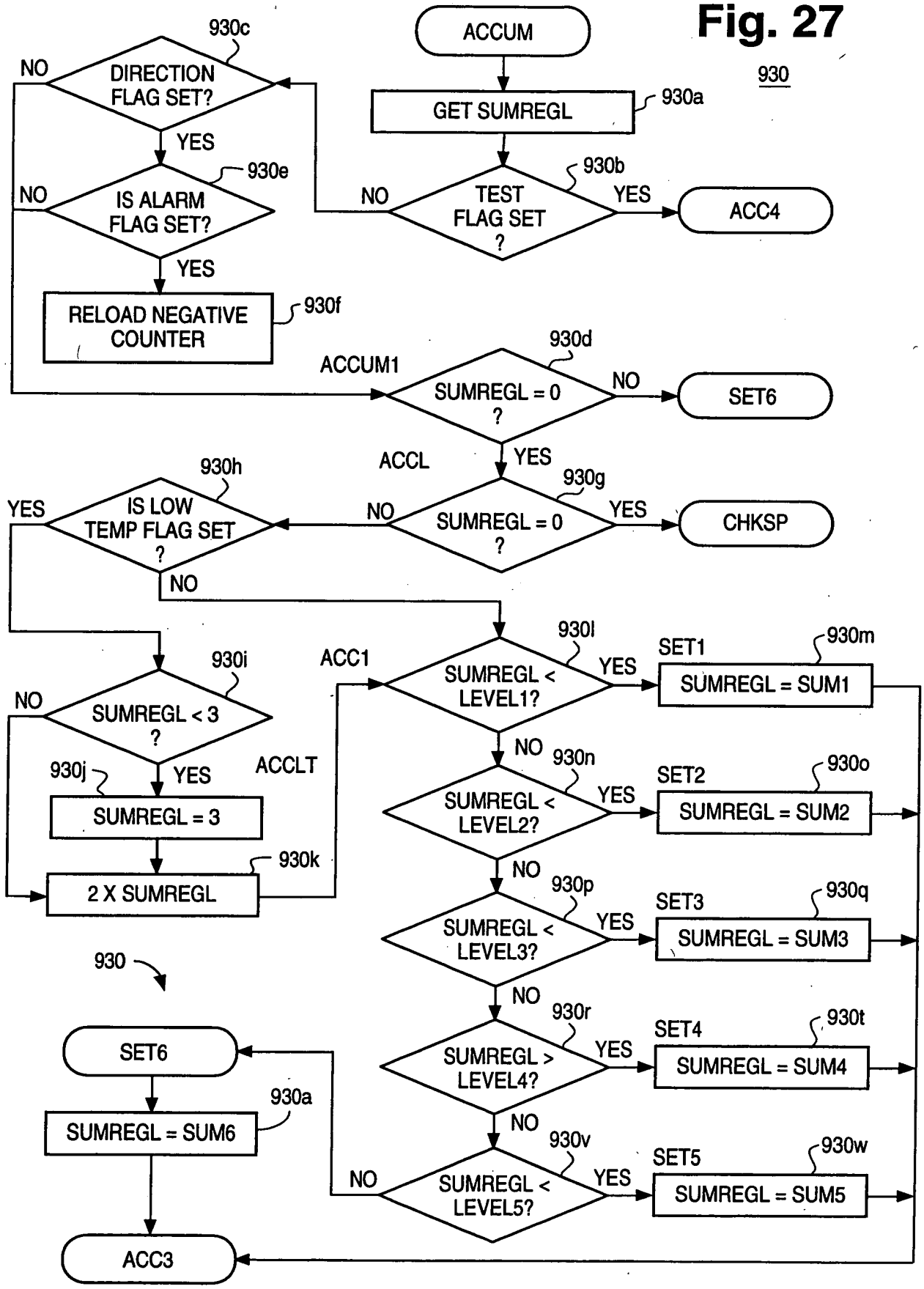

930
ACCUM
GET SUMREGL
930a
930b
TEST FLAG SET ?
NO
YES
ACC4
930c
DIRECTION FLAG SET?
NO
YES
930e
IS ALARM FLAG SET?
NO
YES
RELOAD NEGATIVE COUNTER
930f
ACCUM1
930d
SUMREGL = 0 ?
NO
SET6
ACCL
YES
930g
SUMREGL = 0 ?
NO
YES
CHKSP
930h
IS LOW TEMP FLAG SET ?
YES
NO
930i
SUMREGL < 3 ?
NO
YES
930j
SUMREGL = 3
ACCLT
930k
2 X SUMREGL
ACC1
930l
SUMREGL < LEVEL1?
YES
SET1
930m
SUMREGL = SUM1
NO
930n
SUMREGL < LEVEL2?
YES
SET2
930o
SUMREGL = SUM2
NO
930p
SUMREGL < LEVEL3?
YES
SET3
930q
SUMREGL = SUM3
NO
930r
SUMREGL > LEVEL4?
YES
SET4
930t
SUMREGL = SUM4
NO
930v
SUMREGL < LEVEL5?
NO
YES
SET5
930w
SUMREGL = SUM5
930
SET6
930a
SUMREGL = SUM6
ACC3

Fig. 28

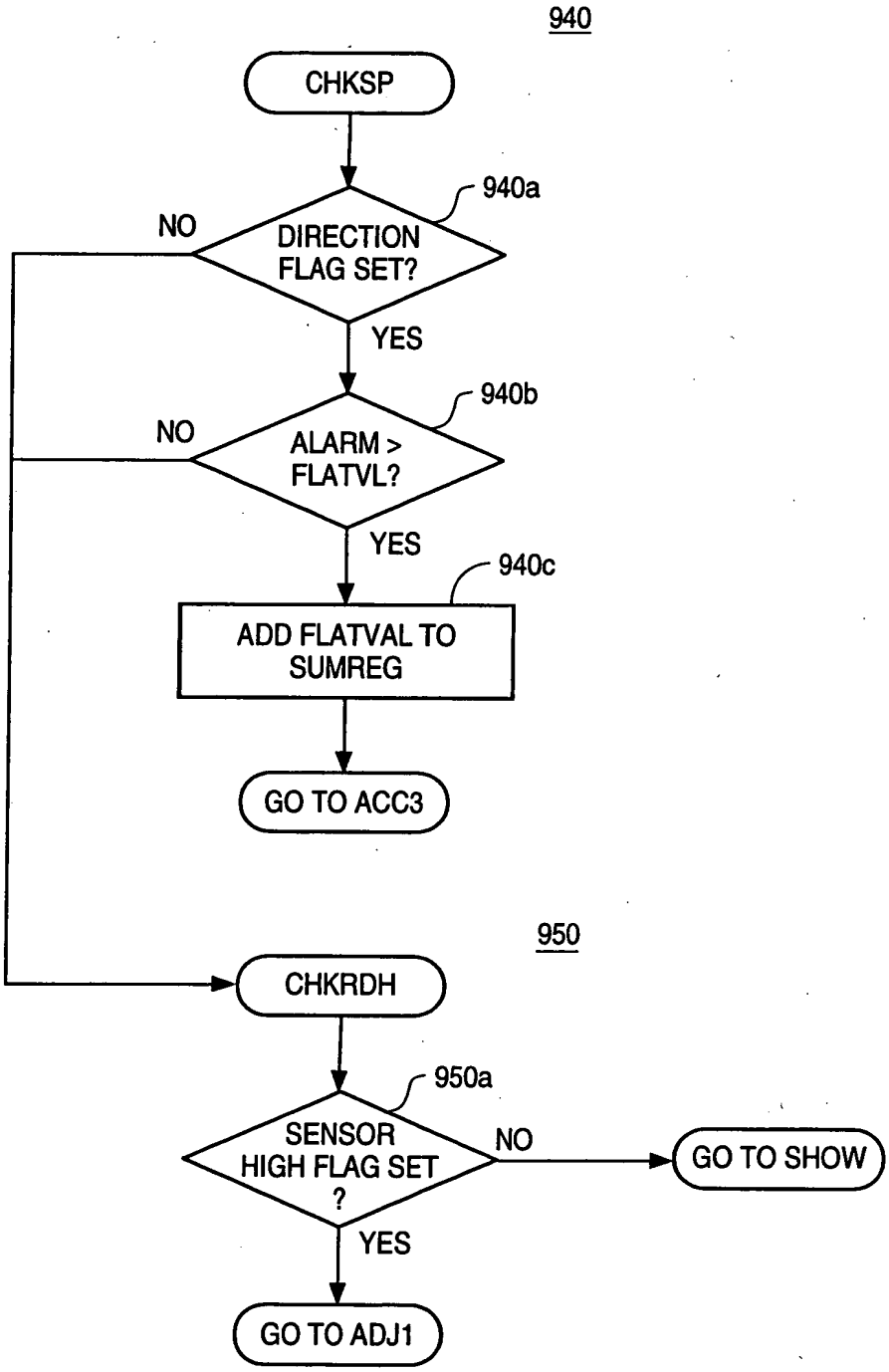

940
CHKSP
940a
NO
DIRECTION FLAG SET?
YES
940b
NO
ALARM > FLATVL?
YES
940c
ADD FLATVAL TO SUMREG
GO TO ACC3
950
CHKRDH
950a
SENSOR HIGH FLAG SET ?
NO
GO TO SHOW
YES
GO TO ADJ1

Fig. 29

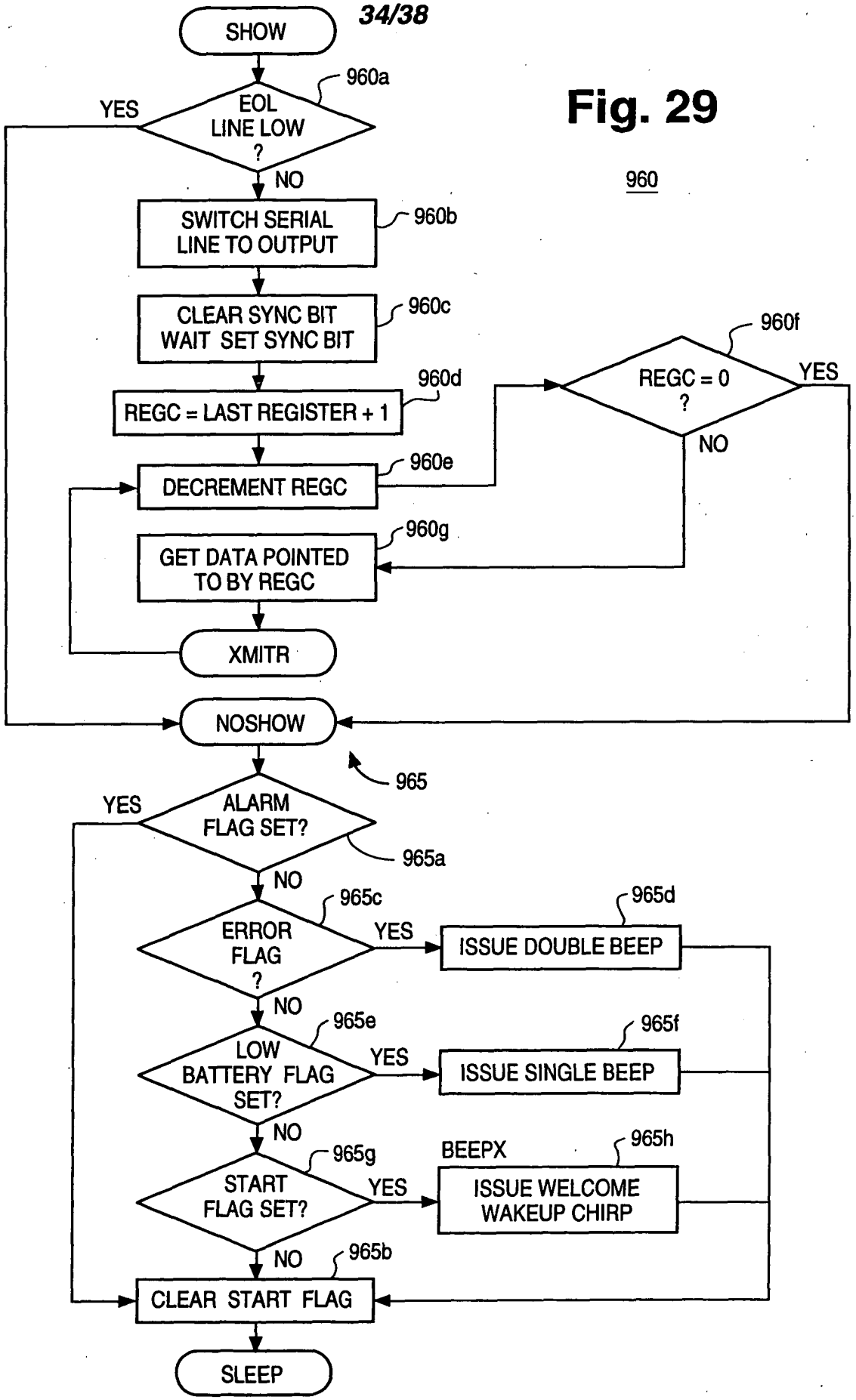
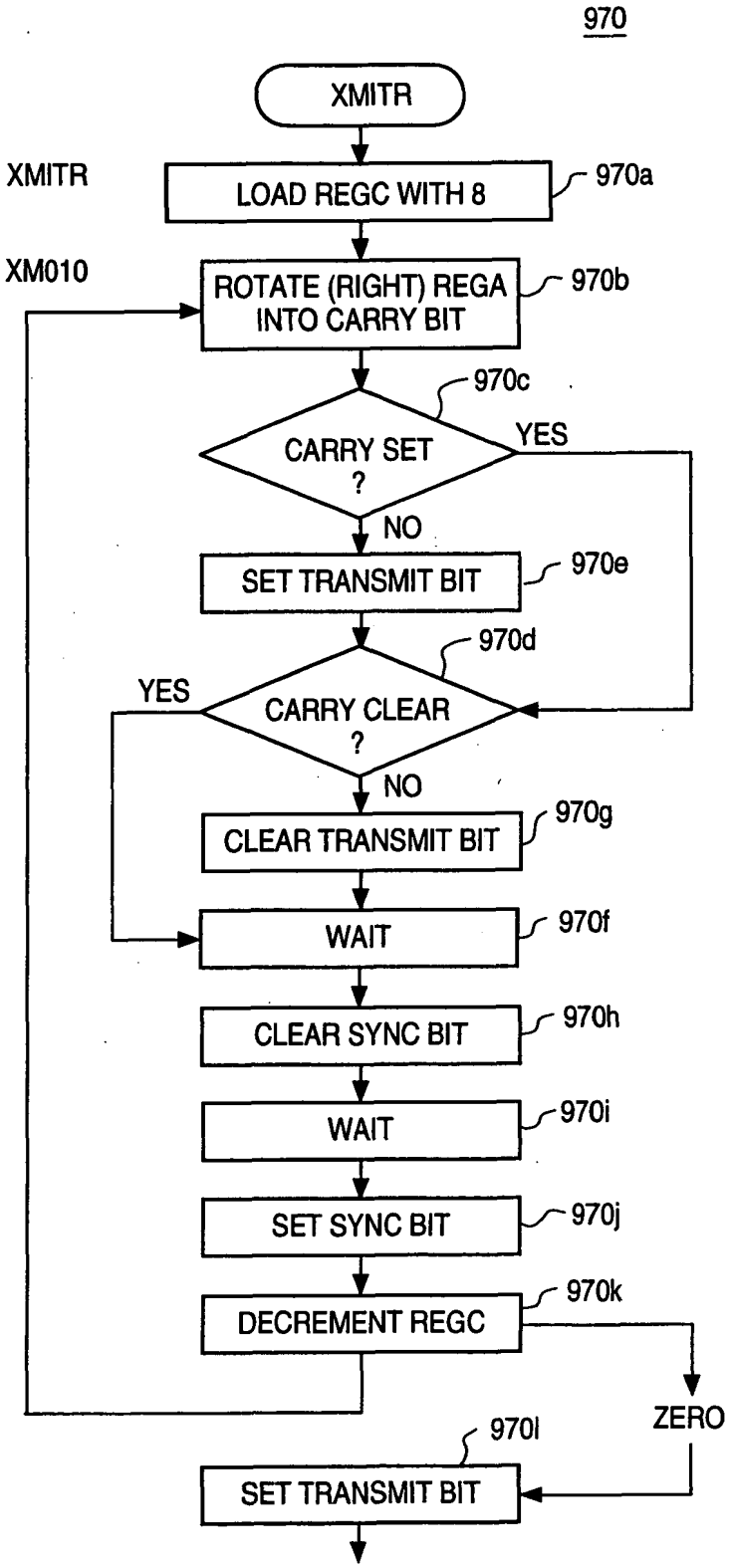

960
SHOW
960a
EOL LINE LOW ?
YES
NO
SWITCH SERIAL LINE TO OUTPUT
960b
CLEAR SYNC BIT WAIT SET SYNC BIT
960c
REGC = LAST REGISTER + 1
960d
DECREMENT REGC
960e
960f
REGC = 0 ?
YES
NO
GET DATA POINTED TO BY REGC
960g
XMITR
NOSHOW
965
ALARM FLAG SET?
YES
965a
NO
ERROR FLAG ?
965c
YES
ISSUE DOUBLE BEEP
965d
NO
LOW BATTERY FLAG SET?
965e
YES
ISSUE SINGLE BEEP
965f
NO
START FLAG SET?
965g
YES
BEEPX
ISSUE WELCOME WAKEUP CHIRP
965h
NO
CLEAR START FLAG
965b
SLEEP

Fig. 30


970
XMITR
XMITR
LOAD REGC WITH 8
970a
XM010
ROTATE (RIGHT) REGA INTO CARRY BIT
970b
970c
CARRY SET ?
YES
NO
SET TRANSMIT BIT
970e
970d
YES
CARRY CLEAR ?
NO
CLEAR TRANSMIT BIT
970g
WAIT
970f
CLEAR SYNC BIT
970h
WAIT
970i
SET SYNC BIT
970j
DECREMENT REGC
970k
ZERO
970l
SET TRANSMIT BIT

975

Fig. 31

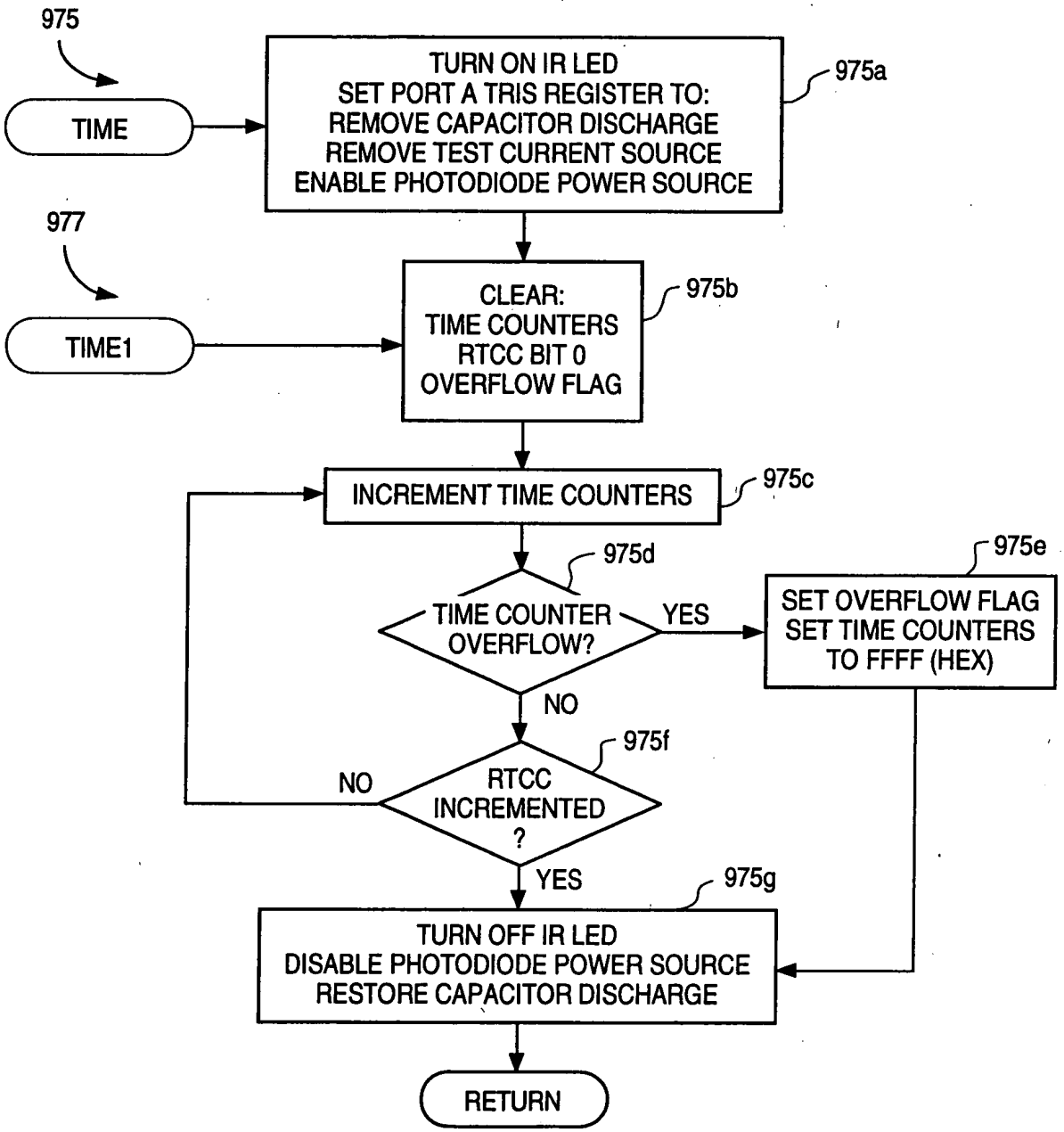

975
TIME
TURN ON IR LED
SET PORT A TRIS REGISTER TO:
REMOVE CAPACITOR DISCHARGE
REMOVE TEST CURRENT SOURCE
ENABLE PHOTODIODE POWER SOURCE
975a
977
TIME1
CLEAR:
TIME COUNTERS
RTCC BIT 0
OVERFLOW FLAG
975b
INCREMENT TIME COUNTERS
975c
975d
TIME COUNTER OVERFLOW?
YES
975e
SET OVERFLOW FLAG
SET TIME COUNTERS
TO FFFF (HEX)
NO
975f
NO
RTCC INCREMENTED ?
YES
975g
TURN OFF IR LED
DISABLE PHOTODIODE POWER SOURCE
RESTORE CAPACITOR DISCHARGE
RETURN

Fig. 32

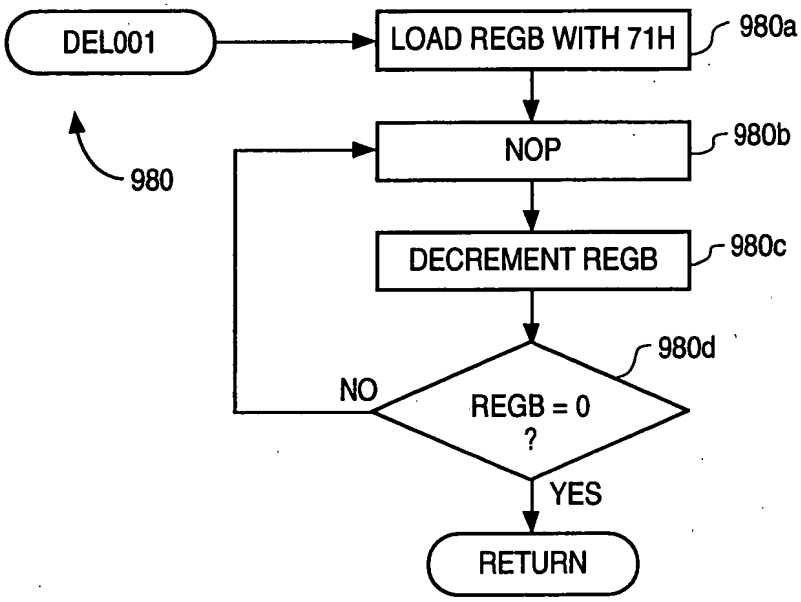

DEL001
LOAD REGB WITH 71H
980a
980
NOP
980b
DECREMENT REGB
980c
980d
NO
REGB = 0
?
YES
RETURN

Fig. 33

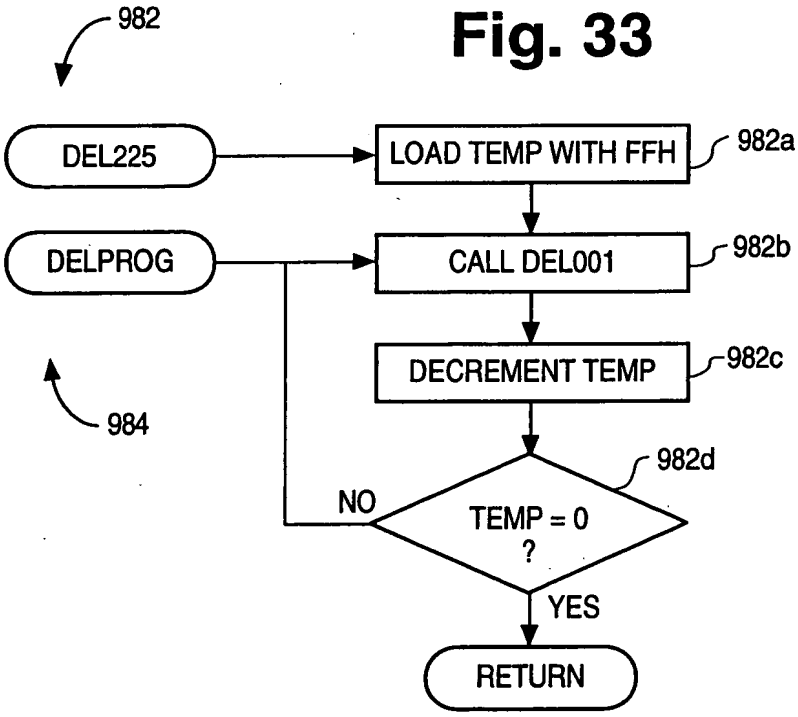

982
DEL225
LOAD TEMP WITH FFH
982a
DELPROG
CALL DEL001
982b
DECREMENT TEMP
982c
984
982d
NO
TEMP = 0
?
YES
RETURN

Fig. 34

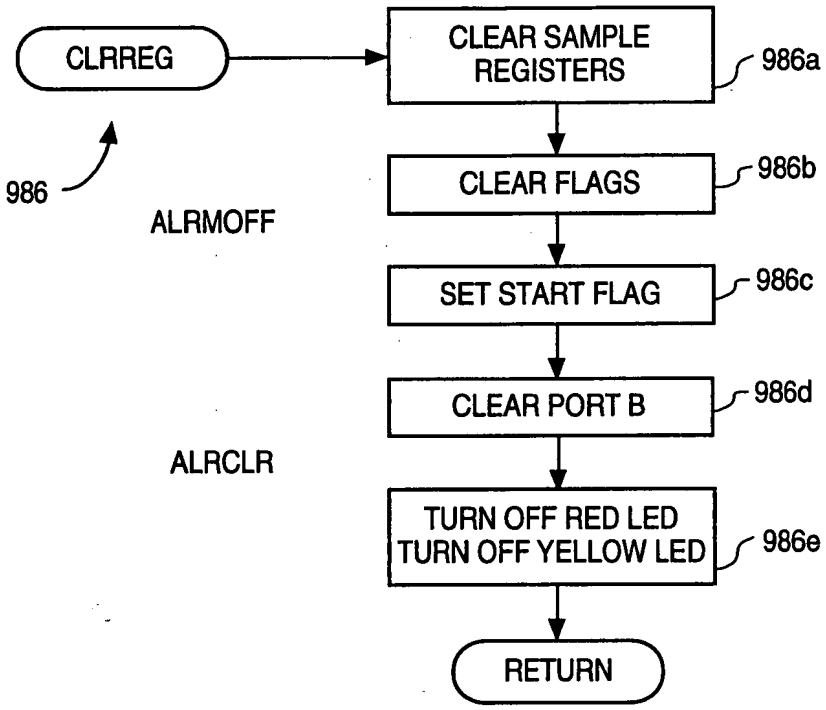
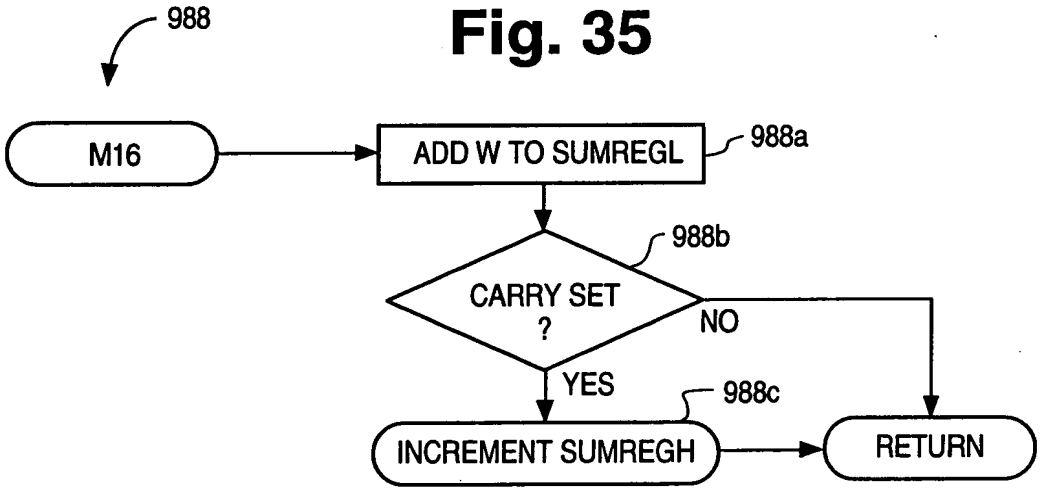

CLRREG
CLEAR SAMPLE REGISTERS
986a
986
ALRMOFF
CLEAR FLAGS
986b
SET START FLAG
986c
CLEAR PORT B
986d
ALRCLR
TURN OFF RED LED
TURN OFF YELLOW LED
986e
RETURN

Fig. 35


988
M16
ADD W TO SUMREGL
988a
988b
CARRY SET ?
NO
YES
988c
INCREMENT SUMREGH
RETURN